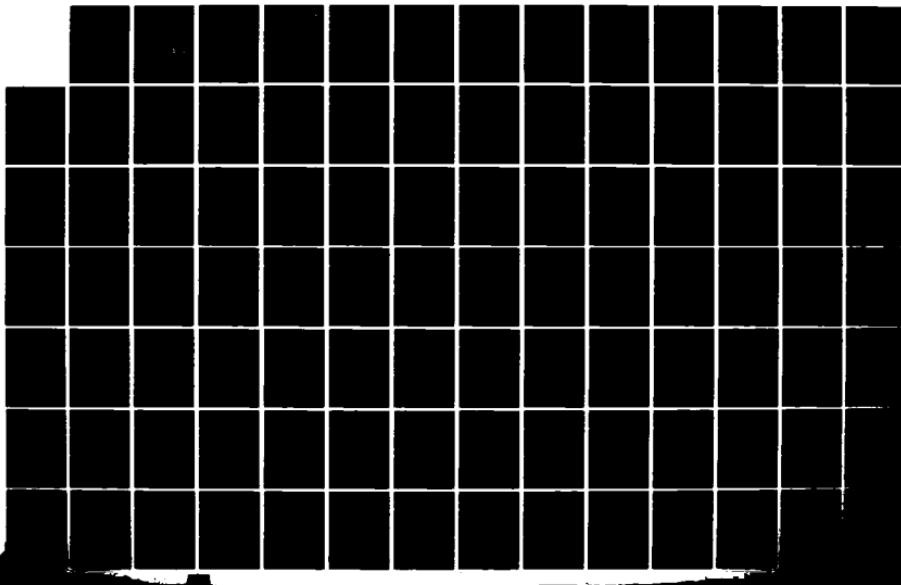
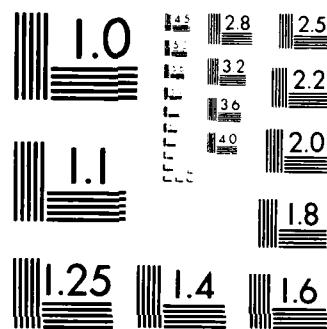


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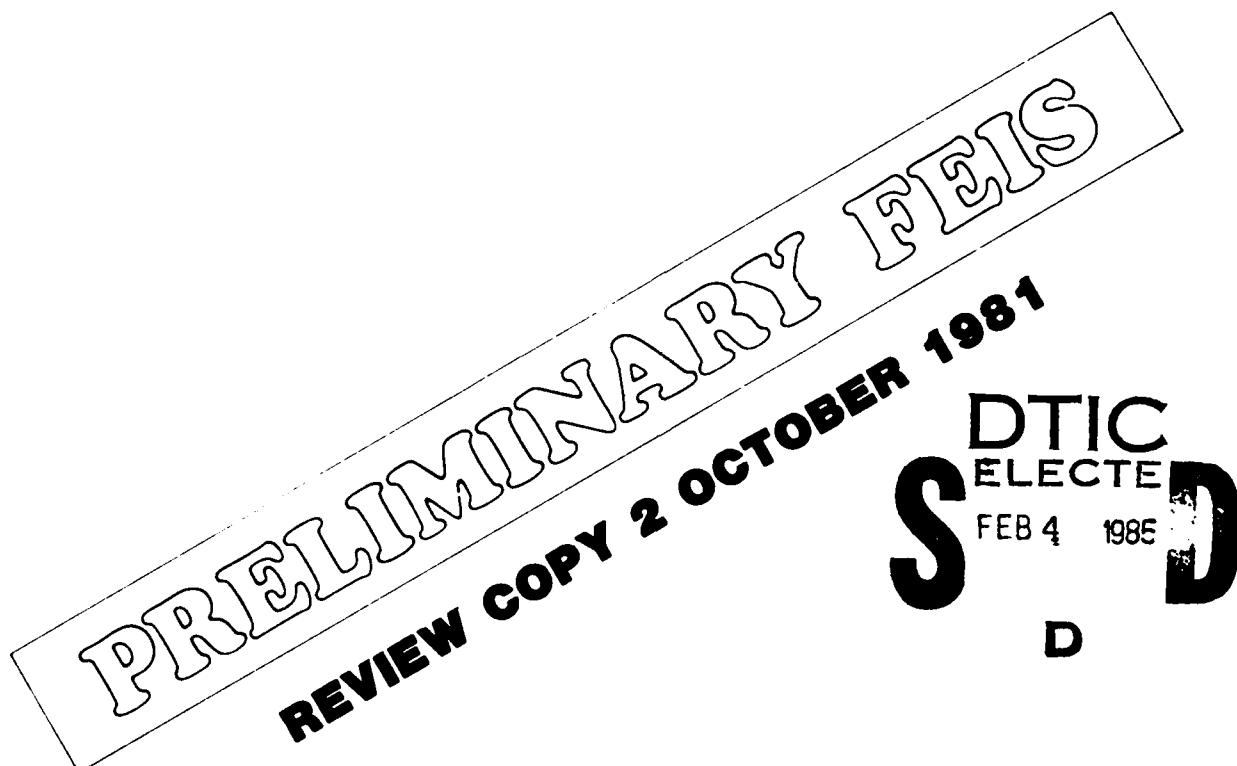


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DEPARTMENT OF THE AIR FORCE

**COMMUNITY SERVICES
AND
INFRASTRUCTURE MODEL**

Prepared for

**United States Air Force
Ballistic Missile Office
Norton Air Force Base, California**

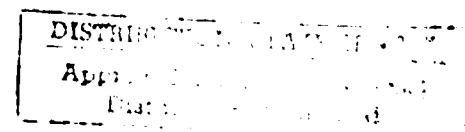
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DEPARTMENT OF THE AIR FORCE
WASHINGTON 20330



OFFICE OF THE ASSISTANT SECRETARY

Federal, State and Local Agencies

On October 2, 1981, the President announced his decision to complete production of the M-X missile, but cancelled the M-X Multiple Protective Shelter (MPS) basing system. The Air Force was, at the time of these decisions, working to prepare a Final Environmental Impact Statement (FEIS) for the MPS site selection process. These efforts have been terminated and the Air Force no longer intends to file a FEIS for the MPS system. However, the attached preliminary FEIS captures the environmental data and analysis in the document that was nearing completion when the President decided to deploy the system in a different manner.

The preliminary FEIS and associated technical reports represent an intensive effort at resource planning and development that may be of significant value to state and local agencies involved in future planning efforts in the study area. Therefore, in response to requests for environmental technical data from the Congress, federal agencies and the states involved, we have published limited copies of the document for their use. Other interested parties may obtain copies by contacting:

National Technical Information Service
United States Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161
Telephone: (703) 487-4650

Sincerely,

A handwritten signature in black ink, appearing to read "James F. Boatright".
JAMES F. BOATRIGHT
Deputy Assistant Secretary
of the Air Force (Installations)

1 Attachment
Preliminary FEIS

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1.0 INTRODUCTION AND OVERVIEW OF THE COMMUNITY SOCIOECONOMIC IMPACT ASSESSMENT MODEL (SIAM) PACKAGE

1.1 INTRODUCTION

Large-scale projects such as the M-X system are likely to result in transformations of communities and regions that are initially small in population and economic output. These socioeconomic changes would be induced during construction and operations phases of the project by expenditures for materials procurement and by direct employment of substantial numbers of workers. The direct economic effects are multiplied within the local economy to produce a larger total expansion of output and employment. One of the more immediate consequences of large-scale economic expansion in local areas which have a small available labor force would be rapid population growth as people move into the region to take advantage of the employment opportunities generated by the project.

Many of the key socioeconomic issues are related to the ability of small communities and sparsely populated regions to accommodate rapid, large-scale economic and population growth without excessive disruption or deterioration in living conditions. Transformations may be expected in the demographic profiles of communities, in local markets for goods and services, in requirements for a stock of physical capital such as housing and other types of buildings, in requirements for conversion of land to urban uses, in needs for public and private infrastructure such as streets and utilities, in needs for various public services and facilities, and in the size and pattern of local government revenues and expenditures. Concerns about these types of issues are intensified by the possibility that a period of rapid expansion during the construction phase of the project (the so-called "boom") may be followed by an equally abrupt period of shrinkage (or "bust") when construction is completed. This "boom-bust" cycle may be especially significant in situations where construction employment greatly exceeds permanent operations employment, as in counties that are affected only by DDA facility construction rather than by operating bases.

The Social Impact Assessment Model (SIAM) is a set of formal mathematical models which have been designed to provide quantitative projections of the effects of projects such as the M-X system on communities and regions, for each of the topics mentioned above. The group of linked, computer-based models provides a comprehensive analytical framework that is sensitive to variations in the project's location, size, and other characteristics, and to baseline differences among communities. The package consists of the following groups of models:

- o Economic
- o Demographic
- o Housing
- o Community Land Use and Infrastructure
- o Community Services and Facilities

o Public Finance

Figure I-1 shows the overall structure of the models and their linkages. This report presents a detailed description of the housing, land use, and community services model groups, while the economic, and demographic, and the public finance models are discussed in separate technical reports, ETR-27 and ETR-29, respectively.

1.2 THE COMMUNITY SERVICES AND INFRASTRUCTURE IMPACT MODELS

These impact models, which may be utilized at the county and individual community levels, consist of three groups: housing, land use and infrastructure, and community facilities and services. The various submodels are described in Table 1.2-1 in terms of their input variables and constants and output variables, including their level of geographical and substantive detail. The three groups are basically driven, with several exceptions, by changes in population size, its composition and spatial distribution. The exceptions are in the areas of housing and land use, where the computed impacts are also a function of economic variables such as employment, personal income, and consumer expenditure patterns. The model outputs in general should be interpreted as forecasts of changes in demand for the various services and infrastructure, rather than as projections of how their supply would be transformed.

1.3 GENERAL CHARACTERISTICS OF THE COMMUNITY SERVICES AND INFRASTRUCTURE MODELS

IMPACT MODELS

All three model groups may be specified in a generalized form or made location-specific by the adjustment of certain parameters to correspond to local data. For purposes of assessment of the M-X project, parameters which express generally accepted standards for various services are specified uniformly for all communities, while other types of parameters are allowed to vary from one place to another. These model characteristics and their application to the M-X project may be summarized as follows:

- o Demographic Detail for In-migrants. The models are capable of differentiating as many as eight different project-related population groups. Each of the submodels may be run separately for each population group so as to isolate the effects associated with that segment of the population. For the M-X analysis, new population groups are differentiated in terms of project-related employment categories, with four types of temporary or construction population (OB construction, cluster construction, OB assembly and checkout, and cluster assembly and checkout), three types of operations population (military officers, military enlisted personnel, and direct civilian employees), and the project-induced indirect population generated to provide local goods and services.
- o Geographic Detail - Place of Residence. The model allocates in-migrant population among several different geographical or spatial categories. First, for the M-X analysis, the various categories of population are allocated to residential locations either on the operations base, in

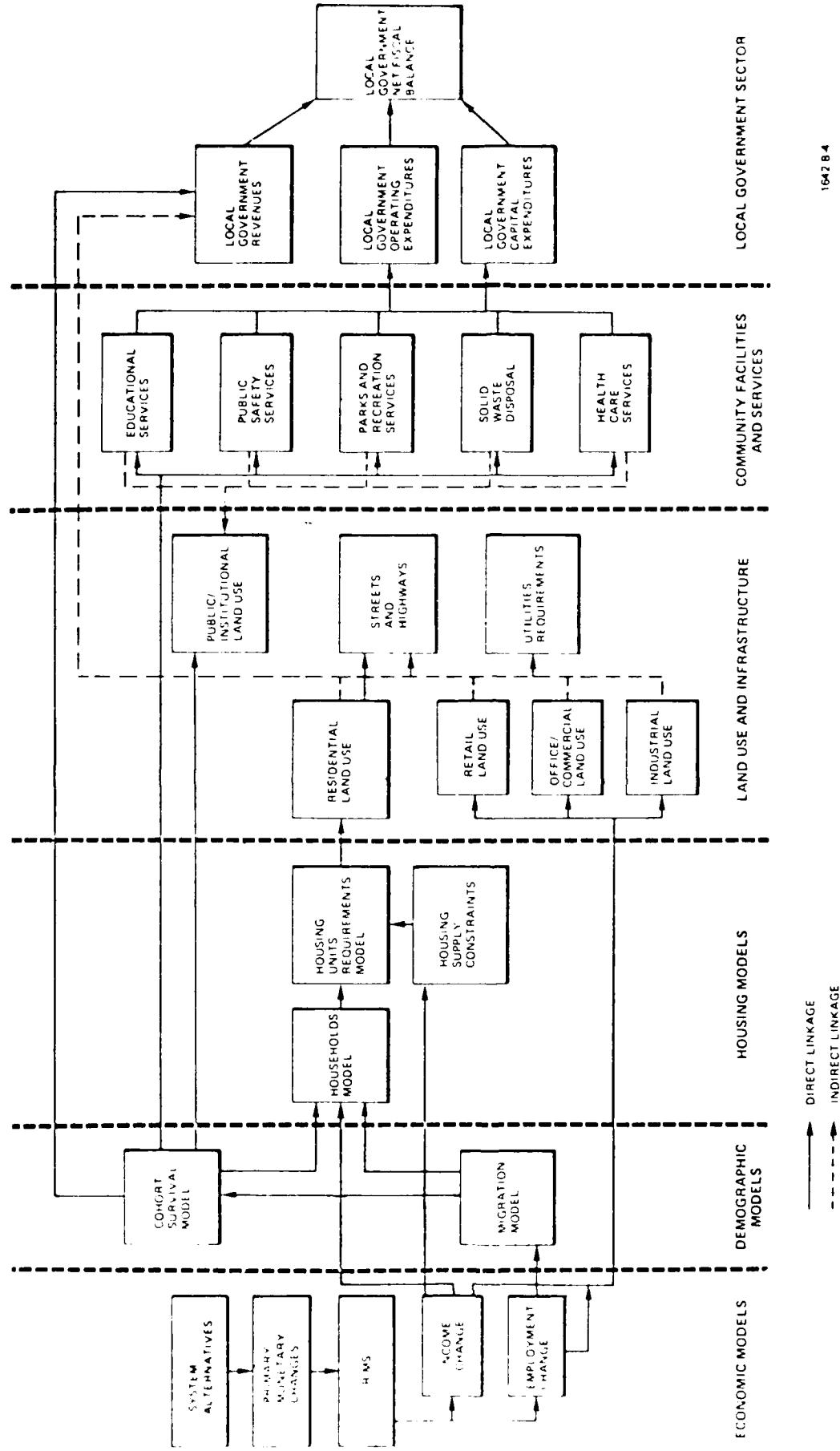


Figure 1-1. Schematic diagram of socioeconomic impact models and their linkages.

Table 1.2-1. Selected characteristics of the community services and infrastructure impact models (Page 1 of 4).

Model Group	Sub-Model	Inputs	Variables	Outputs
Housing	Households	Population matrix of 7 population categories by 3 places of residence	Vector of household sizes for 7 population categories	Geographic Detail 1 place of residence local communities Appropriate number of government jurisdictions
	Housing requirements	Vector of number of households in 7 population categories	Vacancy and replacement allowance factor (.05)	Demographic Detail 7 Population categories base construction, cluster construction, base A & CO., Cluster A & CO., military and civilian operations, and indirect
		Time-varying matrix of proportion of housing units required for 3 housing types and 7 population categories	Matrix of housing units required for 3 housing types and 7 population categories	7 Population categories as above
Land use and infrastructure	Residential land use	Vector of number of housing units for 3 housing types	Vector of density for 3 housing types	Base Construction camps
	Retail land use	Matrix of aggregate disposal income for 7 population categories and 3 places of residence	Proportion of income spent on retail goods	Local communities Appropriate government jurisdictions
			Matrix of proportions of retail expenditures that are local for 7 population groups and 3 places of residence	7 population categories
			Land requirements per unit of retail building space	Local communities Appropriate government jurisdictions
			Construction cost per unit of building area for retail buildings	7 population categories
			Cost of retail construction	Vector of retail land required for 7 population groups

Table 1.2-1. Selected characteristics of the community services and infrastructure impact models (Page 2 of 4).

Model Group	Sub-Model	Inputs	Variables	Constants	Outputs	Geographic Detail	Demographic Detail
Land use and infrastructure (continued)	Streets and highways	Vector of housing units by 3 types	Matrix of linear feet of streets required per housing unit for 3 categories of streets and 3 housing types	Vector of linear feet of street required for 3 housing types	Local communities	None	
			Matrix of linear feet of non-residential streets required per housing unit for 3 categories of streets and 3 housing types	Vector of non-residential street requirements in linear feet for 3 housing types		Appropriate governmental jurisdictions	
			Vector of land area required for 3 street categories	Vector of construction costs for 3 street categories			
			Vector of right-of-way width for 3 street types	Vector of construction cost per linear foot for 3 street categories			
			Population matrix of 7 population categories by 3 places of residence	Vector of educational facility land requirements by 3 school levels	Local communities	None	
Public land use	Matrix of number of pupils by 7 population categories and 3 places of residence	Educational facility land requirements per pupil	Vector of park land requirements per person for 3 types of parks	Vector of park land required for 3 types of parks	Local communities	Appropriate governmental jurisdictions	
			Population matrix of 7 population categories by 3 places of residence		Base		
Utility requirements costs	Vector of number of housing units for 3 types of housing	Vector of sanitary sewer costs per unit for 3 types of housing units	Vector of sanitary sewer development costs for 3 categories; residential, non-residential, and system-wide	Local communities	Appropriate governmental jurisdictions		

Table 1.2-1. Selected characteristics of the community services and infrastructure impact models (Page 3 of 4).

Model Group	Sub-Model	Inputs	Variables	Outputs	Geographic Detail	Demographic Detail
Land use and infrastructure (continued)		System-wide water development cost	System-wide water development cost	Vector of electric system development costs for 3 categories: residential, non-residential, and system-wide		
		Vector of electric utility development costs per unit for 3 types of residential units				
Community facilities and services	Public schools	Household matrix with 7 categories of population by 3 places of residence	Matrix of number of pupils per household for 7 population categories and 3 places of residence	Matrix of number of pupils for 3 grade levels and 3 places of residence	Matrix of number of pupils for 3 grade levels and 3 places of residence	7 population categories (for selected variables only)
		Non-residential electric development cost factor		Matrix of number of teachers required for 3 grade levels and 3 places of residence	Matrix of number of teachers required for 3 grade levels and 3 places of residence	
		System-wide electric utility development costs	Vector of number of pupils per teacher for 3 grade levels	Vector of number of pupils per school facility for 3 school types	Vector of square feet of school space required per pupil for 3 grade levels	Local communities
					Vector of school construction cost for 3 grade levels	7 population Base
					School construction cost per unit of building space	

Table 1.2-1. Selected characteristics of the community services and infrastructure impact models (page 1 of 4).

Model Group	Sub-Model	Inputs	Variables	Outputs	Geographic Detail	Demographic Detail
		Constants	Variables			
Community facilities and services (continued)	Public safety	Population matrix of 7 population categories and 3 places of residence	Matrix of population per fire fighter for 7 population categories and 3 places of residence	Number of fire fighter personnel required	Local communities	None
		Population matrix of 7 population categories and 3 places of residence	Matrix of law enforcement per law enforcement officer for 7 population categories and 3 places of residence	Number of law enforcement personnel required	Local communities	None
Parks and recreation	Solid waste disposal	Population matrix of 7 population categories and 3 places of residence	Vector of park land requirements per person for 3 categories of parks	Vector of park land required 3 park categories	Local communities	None
		Population matrix of 7 population categories and 3 places of residence	Vector of volume of waste generated per person for 7 population categories	Volume of solid waste generated	Local Communities	None
		Population matrix of 7 population categories and 3 places of residence	Vector of weight of waste generated per person for 7 population categories	Weight of solid generated	Local Communities	None
			Vector of land area required for disposal per person for 7 population categories	Land area required for disposal	Local communities	None
Health care		Population matrix of 7 population categories and 3 places of residence	Vector of population per physician for 7 population categories	Number of physicians required	Local communities	None
			Vector of population per registered nurse for 7 population categories	Number of nurses required		
			Vector of population per dentist for 7 population categories	Number of dentists required		
			Vector of population per other type of health workers	Number of mental health personnel required		
			Vector of population per hospital bed	Number of hospital beds required		

construction camps, or in local communities. At a second level, the population projected to reside in local communities is allocated to different subcounty geographical areas which may correspond to governmental jurisdictions, such as cities, towns, townships, and school districts, or to census county divisions. Totals for larger regions are formed by aggregating governmental jurisdictions such as counties. The methodology of the Community Population Allocation Model (CPAM) is described in ETR-37, which also presents population impact forecasts for individual communities as a result of the Proposed Action and the various Project Alternatives.

- o Geographic Detail - Region of Impact Analysis. These may correspond to any geographic area which may be formed by aggregating small government jurisdictions for which data series are available, such as cities and counties. These may include states, groupings of states, and sub-state regions. Only those impacts which occur within the appropriately defined region are computed. For purposes of the M-X analysis, impacts were computed at the individual community and county levels, with regional scale effects calculated as the sum of impacts occurring within the appropriate set of counties.
- o Time Frame for Impact Projection. Impacts are computed annually in the models with separate tabulations of the cumulative impact from year zero and the net additional impact occurring in a given year.
- o Impacts Related to Project Parameters. Impacts may be computed for each element or phase of a project, such as construction, operations, and indirect effects. For the M-X project, five different direct project activities are distinguished: base construction, cluster (technical facility) construction, base assembly and checkout, cluster assembly and checkout, and operations. In addition, for the operations phase, different base sizes in terms of military personnel, civilian employment, and procurement expenditures are analyzed. The user can specify and evaluate various scenarios by providing appropriate project descriptive data for input to the models.
- o Mode of Analysis. The models can be run in three modes: (1) baseline socioeconomic change with no project, (2) net project-related socioeconomic impact, and (3) total or cumulative socioeconomic change in an area due to the M-X project and other sources of change. In the Nevada/Utah region of influence (ROI), these other sources of change include a number of energy, mineral, and manufacturing projects which could be constructed concurrently with M-X in several counties.

In the following sections, the general structure, assumptions, and logic of the models are discussed for each submodel individually along with examples of the summarized output tables and their interpretation. Unsummarized model outputs and population data by employment category and place of residence are shown in Appendix A, Table A-1.

2.0 HOUSING SECTOR MODEL GROUP

2.1 MODEL STRUCTURE AND DESCRIPTION

The purposes of this submodel are to develop quantitative projections, on a year by year basis, of the number of project-related households expected to reside in local communities and the number and type of housing units that must be provided (or removed) in order to accommodate them. This is accomplished in four steps: a) estimation of the number of M-X-related in-migrant households by employment category of the principal wage earner in a household, b) projection of total requirements for housing units to accommodate households allowing for a "normal" or frictionless vacancy rate (five percent), c) estimation of constraints on the production of new permanent dwellings in housing markets which are initially very small, and d) projection of likely changes in housing supply as a consequence of the M-X project. The following sections describe the computational procedures, assumptions, and underlying rationale for each of these routines.

HOUSEHOLDS AND HOUSING DEMAND (2.1.1)

The inputs to this submodel are a vector of population, consisting of seven project-related employment categories, and a corresponding vector of average household size for each population category. The population vector is that subset of total project-induced population growth which is projected to reside in communities. It excludes that portion of construction workers in temporary construction camps and 80 percent of the military personnel, who are assumed to reside on the Air Force base. The number of households is computed by dividing the population vector by the average household size vector, which is derived from sample data available from secondary sources for each of the source groups for M-X-related in-migrant population. These constants and their sources are as follows:

Household Category	Average Household Size	Source or Reference
Construction and Assembly and Checkout workers (family households)	3.6	Mountain West Research, Inc., <u>Construction Worker Profile Final Report, 1975</u>
Military (family households)	3.4	U.S. Department of Defense, 1980
Civilian and Indirect (all households)	2.8	Bureau of the Census, 1979

The household size parameters for the first two categories, construction workers and military workers, include only that portion of the population which is present in family households, since it is assumed that construction workers unaccompanied by their families and single Air Force personnel would reside in group housing. Housing services for these latter two groups would be obtained either from construction contractors or the Air Force, rather than in local housing

markets. Approximately 50 percent of the non-local construction and A&CO workers are assumed to have their housing provided in temporary construction camps, while the remaining portion, who are accompanied by their families, compete for private housing services in local communities. This estimate is derived from information contained in Construction Worker Profile, Final Report. Seventy-six percent of the non-local workforce is married, and of this number, 63 percent are accompanied by their families. Thus, 48 percent of the non-local workforce bring dependents to the job location with them. Unlike construction workers and military personnel, civilian operations and indirect workers residing in local communities would consist of both family households and households composed of unrelated individuals. The average household size, estimated from recent national data from the Bureau of the Census, is correspondingly lower for these population groups. In addition, this procedure assumes that civilian in-migrants would be drawn from throughout the nation. The total number of households which would compete in local housing markets for their housing services is the sum of the numbers of households computed for each of the population categories. Household size for the indigenous population varies by county and is based upon data from the 1980 census of population.

In addition to the number of in-migrant households generated by the project, M-X-related housing demand would be a function of the incomes, housing (shelter) expenditure potential, and preference patterns of the in-migrant households. Data on assumed average income and shelter expenditure potential are shown in Tables 2.1.1-1 and 2.1.1-2 for five categories of households, with the first table assuming one person employed in each household and the second assuming an additional employed worker earning the average wage obtained in indirect jobs. In the absence of specific data on preferences for housing relative to other goods, it is assumed that the maximum monthly expenditure for shelter is 33 percent of gross income, a figure which is becoming commonly used as an underwriting criterion by mortgage lenders and by government housing assistance programs. The data show the maximum monthly rent affordable for workers with an average salary ranges from \$962 for construction workers, to \$314 for enlisted military personnel, assuming one-worker households: the corresponding values for two-worker households would be \$1,361 and \$712 per month, respectively. The maximum affordable home purchase prices are also shown in the tables, with a maximum price of \$89,200 for construction-worker households with one employed person, ranging to a low of about \$29,000 for enlisted military personnel. The equivalent values for two-worker households are \$126,100 and \$65,300, respectively. All of these affordable prices assume mortgage interest rates of 16 percent, 30 year amortization periods, and downpayments of 20 percent of the purchase price, although equivalent data for other interest rates are shown in the tables. Although the aspect of money demand for housing is not a formal part of the model, these data are used in qualitatively assessing the probable market response to the increment of demand for dwelling units induced by the M-X project.

Although available data about housing preferences, demand, and actual consumption patterns of construction worker households are very limited, the Construction Worker Profile (Mountain West Research, Inc., December 1975) provides a useful starting point for estimating these types of parameters. Data from the sample survey of residents in five western communities currently affected by large-scale energy and mineral development projects are shown in Table 2.1.1-3. The housing supply matrix described in a subsequent section is partially determined

Table 2.1.1-1. MX-related household shelter expenditure potential by price and rent levels, by employment category, assuming one worker per household.

Household Category	Average Annual Income (1980 \$)	Annual Shelter Expenditures As a Percent of Gross Income	Annual Shelter Expenditure Potential	Monthly Shelter Expenditure Potential	Maximum Monthly Rent Affordable	Maximum Home Price Affordable By Mortgage Interest Rate
				12 Percent	14 Percent	16 Percent
Construction Workers	\$ 35,000	33	\$11,550	\$962	\$116,300	\$101,100
Assembly & Checkout	25,000		8,250	688	83,100	72,200
Military Households						
Officers Enlisted	25,800 11,400	33 33	8,514 3,762	710 314	85,700 37,900	75,500 32,900
Civilian Base Employees	19,700	33	6,501	542	65,500	56,900
Indirect Workers	14,500	33	4,785	399	48,200	41,900
T 3620/9-23-81						

¹ Assumes down payment is 20 percent of purchase price and a term of 10 years; excludes homeowners' insurance and property taxes; computed on an annual basis.

Sources: Construction - U. S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, August 1980.

I. & CO - U.S. Air Force, Ballistic Missile Office.

Operations - U. S. Air Force, Ballistic Missile Office.
(Officers, enlisted personnel, and civilians)

Indirect - U. S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, August 1980.

Table 2.1.1-2. M-X-related household shelter expenditure potential by price and rent levels, by employment category of primary wage earner, assuming two workers per household.

Household Category	Average Annual Income (1980 \$)	Annual Shelter Expenditures As a Percent of Gross Income	Annual Shelter Expenditure Potential	Monthly Shelter Expenditure Potential	Maximum Monthly Rent Affordable	Maximum Home Price Affordable By Mortgage Interest Rate
				12 Percent	14 Percent	16 Percent
Construction Workers	\$49,500	33	\$16,335	\$1,361	\$164,500	\$143,000
Assembly & Checkout	39,500	33	13,035	1,086	131,200	114,100
Military Households						100,600
Officers Enlisted	40,300 25,900	33 33	13,229 8,547	1,108 712	133,200 86,100	115,800 74,800
Civilian Base Employees	34,200	33	11,286	941	113,600	98,800
Indirect Workers	29,000	33	9,570	798	96,400	83,800
T 1621/9-23-81						73,900

1 Assumes second wage earner has the average income of indirect workers.

2 Assumes down payment is 20 percent of purchase price and a term of 30 years; excludes homeowners' insurance and property taxes; computed on an annual basis.

Sources:

Construction - U. S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, August 1980.

A & CO - U. S. Air Force, Ballistic Missile Office.

Operations - U. S. Air Force, Ballistic Missile Office.
(Officers, enlisted personnel, and civilians)

Table 2.1.1-3.

Housing preference, demand, and actual consumption patterns of construction workers, other newcomers, and long-time residents in five western communities sampled in the Construction Worker Profile study.

Type of Unit	Newcomer Construction Workers			Other Newcomers			Long-Time Residents		
	Preference	Effective Demand	Actual Consumption	Preference	Effective Demand	Actual Consumption	Preference	Effective Demand	Actual Consumption
Single-Family	0.46	0.34	0.19	0.70	0.55	0.44	0.87	0.81	0.76
Duplex-Townhouse	0.01	0.02	0.02	0.04	0.04	0.05	0.01	0.01	0.01
Apartment	0.08	0.09	0.10	0.07	0.13	0.16	0.03	0.04	0.04
Mobile Home	0.38	0.46	0.53	0.17	0.25	0.32	0.09	0.13	0.18
Other	0.08	0.10	0.16	0.01	0.02	0.03	0.01	0.01	0.01
Total	1.01	1.01	1.00	0.99	0.99	1.00	1.01	1.00	1.00

T 3,22/10-2-81/a

Source: Mountain West Research, Inc., December 1975, Construction Worker Profile Final Report (Billings MT, Old West Regional Commission), p. 103.

by evaluating incomes, housing expenditure potential, and preference patterns to assess the demand side of the housing market effects induced by the project.

TOTAL HOUSING UNIT REQUIREMENTS (2.1.2)

Total M-X-related housing requirements in a given year, and net annual requirements for additional new dwellings, are a function of the number of in-migrant households with an allowance for a "normal" vacancy rate and replacements for units which are removed from the market inventory due to events such as fires or demolitions (five percent). Housing unit requirements are computed as 1.05 times the increment of increase in the number of households and should be interpreted as the number of units which are required to accommodate all households and allow for relatively frictionless turnover. The vacancy rate assumed is an aggregate one which averages over rental and sales housing as well as over single-family and multi-family units.

HOUSING SUPPLY CONSTRAINTS (2.1.3)

There are persuasive reasons for expecting that the total number of units required by M-X-related households, or number for which there is effective economic demand, will be only partially supplied in the smaller local housing markets by permanent dwellings, at least in the initial years. To replicate this "real world" situation in the model, housing supply constraints matrices were estimated which indicate for each category of households the proportion of their housing requirements that would likely be met by permanent housing, including single-family and multi-unit dwellings, and by mobile homes. In addition to demand factors such as average household income (or ability to afford the prices and rents of new units) and preference patterns for the various housing types, the estimated distribution among structure types of new housing provided each year would be a function of the capabilities of local housing suppliers to produce new permanent housing. These capabilities are likely to be limited initially by several factors. Among them are the small size of the local homebuilding industry, insufficient local supply of skilled construction labor, difficulty in competing for construction labor against M-X, lack of available building sites which have urban services, time lags involved between land acquisition and improvement and actual completion of dwellings, and insufficient locally available supply of mortgage capital for both construction and permanent financing. There is a high probability that housing markets in the smaller communities will be relatively unorganized until market institutions have time to become more fully developed. The likelihood is that these production constraints would be more severe in the short term. The temporary nature of a sizable portion of housing demand during the construction phase of the M-X project will shift larger shares of housing provided in the initial years to the mobile home category. With the passage of time, stabilization of housing demand and improving production capabilities for permanent housing would result in increasing shares of demand being supplied by permanent residential construction.

These effects are represented in the model by varying over time the housing supply constraints matrices which indicate the proportions of housing requirements met by each of the three housing types for each of the seven population categories. The initial matrix, shown on the left side of Table 2.1.3-1, shows that a small share of housing requirements in the first year would be met through production of new permanent housing while large proportions are mobile homes. Base construction

Table 2.1.3-1. Initial and steady-state community housing supply proportions by housing type, for seven household categories.

Household Category	Initial Housing Supply Constraints Matrix			Stable, Steady-State Housing Supply Matrix		
	SF ¹	MF ¹	MH ¹	SF	MF	MH
Base construction	0.20	0.10	0.70	0.25	0.15	0.60
Base A&CO	0.0	0.0	1.00	0.0	0.0	1.00
Cluster construction	0.10	0.10	0.80	0.6	0.2	0.2
Cluster A&CO	0.10	0.10	0.80	0.6	0.2	0.2
Military operations	0.10	0.10	0.80	0.60	0.20	0.20
Civilian operations	0.10	0.10	0.80	0.60	0.20	0.20
Indirect	0.10	0.10	0.80	0.60	0.20	0.20

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Note: 1 SF - Single Family; MF - Multiple Family and MH - Mobile Home

Source: HDR Sciences, based on Construction Worker Profile, Final Report, 1975.

workers would be provided a proportionately greater share of permanent housing units initially, due to their much larger purchasing power and effective economic demand, while smaller proportions of lesser-income military and indirect households would obtain permanent housing. Cluster (DDA facility) construction worker households are assumed to demand only mobile homes because of the itinerant nature of their construction activities in remote areas. The proportion of the housing supplied in the form of mobile homes is approximately equal to that actually consumed by newcomer construction workers as reported in Construction Worker Profile: Final Report (see Table 2.1.1-3: "Mobile Home" and "Other" categories). On the right of Table 2.1.3-1 are shown the long-term housing supply proportions, with much higher shares for single-family and multiunit housing constructed onsite. Parameters in the long-term matrix are estimated from data for a sample of small western communities which have Air Force bases (U.S. Bureau of the Census, 1978) and also from data on housing patterns of construction workers (Mountain West Research, Inc., 1975).

CHANGE IN HOUSING SUPPLY (2.1.4)

The total change in housing supply as of a given year is projected by multiplying the numbers of in-migrant households in the seven categories by the appropriate values from the applicable housing supply matrix. The total number of units of a given type is obtained by summing across the household categories and multiplying by 1.05 to include an allowance for vacant units and replacements. The procedure is repeated for each of the three housing types. Annual change in supply of housing units of a given type, which may be positive or negative, is computed as the difference from the previous year in the number of units of a given type. Positive numbers indicate the number of newly constructed permanent housing units or newly delivered mobile homes, while negative signs indicate surplus inventories of permanent units or removals of mobile homes.

2.2 EXAMPLE HOUSING MODEL OUTPUTS AND INTERPRETATION

Illustrative housing sector model outputs are presented in Tables 2.2-1 through 2.2-4. These tables show, respectively, the number of in-migrant households by population category, total housing requirements by type of structure, net annual housing production required (or surpluses of units which must be removed), also by type of structure, and cumulative additional housing units required as a result of M-X and other concurrent projects. The following sections describe each summary output table in terms of how it should be interpreted and provide the equations for computing the values for the variables. Population input data by employment category and place of residence for the Proposed Action are shown in Appendix A-1 for Beaver County, Utah, site of the second operating base. The appendix also contains the detailed, unsunmarized model output for Beaver County for the Proposed Action.

NUMBER OF HOUSEHOLDS (TABLE 2.2-1)

The total numbers of M-X-related in-migrant households that would be present in the example county are shown in the table for each year from 1982 through 1994 for each population category. Population categories are defined by the employment type of the primary wage earner in a household. In households with more than one worker, the general rule is that the household is classified by the

TABLE 2-2-1. Cumulative Mx-Related Households Expected To Reside In Local Communities In Beaver County, Ut.
Assuming Trend Baseline
(Page 1 of 2)

Alternative / Expected Source Of Need	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline Households	1522	1561	1605	1651	1672	1687	1702	1717	1731	1751	1770	1788	1803
Proposed Action													
Construction worker	49	229	563	1699	1452	793	264	0	0	0	0	0	0
Ass. & Co. worker	0	0	13	11	364	204	26	0	0	0	0	0	0
Military operations	0	0	0	4	25	228	499	619	619	619	619	619	619
Civilian operations	0	0	0	0	38	190	604	765	765	765	765	765	765
Indirect worker	0	0	456	1389	2337	2791	1954	1075	274	0	0	0	0
Total M-X related	49	229	1032	3103	4215	4205	3347	2459	1658	1384	1384	1384	1384
Percent difference													
From baseline	3.2	14.6	64.3	188.0	252.2	249.3	196.7	143.2	95.8	79.1	78.2	77.4	75.8
Alternative 1													
Construction worker	49	229	500	1036	690	122	11	0	0	0	0	0	0
Ass. & Co. worker	0	0	13	11	364	188	26	0	0	0	0	0	0
Military operations	0	0	0	1	7	63	139	172	172	172	172	172	172
Civilian operations	0	0	0	0	0	3	30	41	41	41	41	40	40
Indirect worker	0	0	0	14	114	247	166	102	81	77	76	76	76
Total M-X related	49	229	512	1063	1175	623	372	315	294	290	289	289	288
Percent difference													
From baseline	3.2	14.6	31.9	64.4	70.3	36.9	21.9	18.3	17.0	16.5	16.3	16.1	16.0
Alternative 2													
Construction worker	49	229	500	1036	690	122	11	0	0	0	0	0	0
Ass. & Co. worker	0	0	13	11	364	188	26	0	0	0	0	0	0
Military operations	0	0	0	0	0	0	0	0	0	0	0	0	0
Civilian operations	0	0	0	0	0	3	30	41	41	41	41	40	40
Indirect worker	0	0	0	0	0	65	6	0	0	0	0	0	0
Total M-X related	49	229	512	1048	1054	377	74	41	41	41	41	40	40
Percent difference													
From baseline	3.2	14.6	31.9	63.5	63.0	22.3	4.3	2.4	2.4	2.3	2.3	2.3	2.2
Alternative 3													
Construction worker	218	414	274	1071	630	88	84	0	0	0	0	0	0
Ass. & Co. worker	2	10	31	95	546	171	61	56	9	0	0	0	0
Military operations	0	1	7	80	182	245	245	245	245	245	245	245	245
Civilian operations	0	0	0	14	32	50	50	50	50	50	50	50	50
Indirect worker	10	113	196	103	224	395	250	216	157	125	119	118	118
Total M-X related	230	538	507	1363	1615	949	690	567	461	420	414	413	413
Percent difference													
From baseline	15.1	34.5	31.6	82.6	96.6	56.2	40.5	33.0	26.6	24.0	23.4	23.1	22.9

Source: HDR Sciences, 28-AUG-81

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TABLE 2.2-1. Cumulative MX-Related Households Expected To Reside In Local Communities In Beaver County, Ut.
 Assuming Trend Baseline
 (Page 2 of 2)

Alternative / Expected Source Of Need	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 4													
Construction worker	87.	308.	570.	1056.	674.	99.	0.	0.	0.	0.	0.	0.	0.
Ass. & Co. worker	1.	5.	25.	34.	395.	218.	58.	31.	6.	0.	0.	0.	0.
Military operations	0.	1.	7.	80.	182.	245.	245.	245.	245.	245.	245.	245.	245.
Civilian operations	0.	0.	0.	14.	32.	50.	50.	50.	50.	50.	50.	50.	50.
Indirect worker	29.	109.	137.	159.	233.	360.	256.	198.	148.	123.	119.	118.	118.
Total MX related	118.	424.	739.	1343.	1515.	972.	609.	525.	450.	418.	414.	413.	413.
Percent difference													
From baseline	7.7	27.2	46.0	81.3	90.6	57.6	35.8	30.6	26.0	23.9	23.4	23.1	22.9
Alternative 5													
Construction worker	710.	1451.	1250.	1996.	1183.	459.	84.	0.	0.	0.	0.	0.	0.
Ass. & Co. worker	18.	75.	193.	388.	1018.	642.	533.	527.	123.	0.	0.	0.	0.
Military operations	0.	5.	25.	289.	654.	882.	882.	882.	882.	882.	882.	882.	882.
Civilian operations	0.	0.	29.	350.	625.	898.	898.	904.	904.	904.	904.	904.	904.
Indirect worker	727.	2082.	3278.	3586.	2643.	1589.	598.	0.	0.	0.	0.	0.	0.
Total MX related	1455.	3613.	4774.	6608.	6124.	4471.	2995.	2313.	1909.	1786.	1786.	1786.	1786.
Percent difference													
From baseline	95.6	231.4	297.5	400.3	366.4	265.1	176.0	134.7	110.3	102.0	100.9	99.9	99.1
Alternative 6													
Construction worker	579.	1346.	1546.	1981.	1227.	470.	0.	0.	0.	0.	0.	0.	0.
Ass. & Co. worker	18.	70.	188.	326.	801.	624.	464.	438.	88.	0.	0.	0.	0.
Military operations	0.	5.	25.	289.	654.	882.	882.	882.	882.	882.	882.	882.	882.
Civilian operations	0.	0.	29.	350.	625.	898.	898.	904.	904.	904.	904.	904.	904.
Indirect worker	746.	2078.	3219.	3641.	2653.	1543.	593.	0.	0.	0.	0.	0.	0.
Total MX related	1342.	3499.	5006.	6587.	5961.	4418.	2838.	2224.	1874.	1786.	1786.	1786.	1786.
Percent difference													
From baseline	88.2	224.1	311.9	399.1	356.6	261.9	166.8	129.5	108.2	102.0	100.9	99.9	99.1
Alternative 8A													
Construction worker	0.	66.	366.	918.	762.	182.	21.	0.	0.	0.	0.	0.	0.
Ass. & Co. worker	0.	0.	20.	40.	198.	509.	71.	0.	0.	0.	0.	0.	0.
Military operations	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Civilian operations	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Indirect worker	0.	0.	0.	0.	0.	0.	0.	163.	15.	0.	0.	0.	0.
Total MX related	0.	66.	386.	958.	960.	691.	255.	15.	0.	0.	0.	0.	0.
Percent difference													
From baseline	0.0	10.6	24.1	58.1	57.4	41.0	15.0	9.9	0.0	0.0	0.0	0.0	0.0

Source: HDR Sciences, 28-AUG-81

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employment category of the worker holding an M-X direct job. For example, a household which contains two employed persons, one as an M-X construction worker and the other in an indirect job, would be classified in the construction worker population category.

The table also shows the percentage increase in the number of households over the baseline as a result of in-migration of M-X-related households. These data indicate the change generated by M-X-related households present in the example county in a given year, relative to the number of baseline households which would be present that year without the M-X project. The data do not identify the relative change from the present time or from a single baseline year.

The number of baseline households shown in the example table, for instance 1,687 in 1987, are computed as the quotient of baseline population and estimated average household size in the county, conservatively assumed to be constant throughout the projection period at the average household size measured by the 1980 Census (U.S. Bureau of the Census, 1981): 3.06 persons per household. Average household size is estimated separately for each county in the two potential deployment regions as the size measured by the 1980 Census, although the historical pattern has been one of declining size. These data are shown in Appendix A, Table A-2.

Computational Equations

$$(1) \quad H_T^t = \sum_{i=1}^n \frac{P_i^t}{A_i} = \sum_{i=1}^n H_i^t$$

H_T^t = Total number of Households present in year t

where P_i^t = Population in the ith population category resident in communities in year t

A_i = Average household size for the ith population category

H_i^t = Number of households in the ith population category in year t

t = Year or time period

n = Number of population categories = 7

In the example summary table, five population categories are distinguished and the equation becomes:

$$(2) \quad H_T^t = \frac{P_C^t}{A_C} + \frac{P_a^t}{A_a} + \frac{P_m^t}{A_m} + \frac{P_o^t}{A_o} + \frac{P_d^t}{A_d}$$

where P_C^t = Population in construction worker category resident in communities in year t

A_c	=	Average household size for construction worker families = 3.6
P_a^t	=	Population in assembly and checkout worker category resident in communities in year t
A_a	=	Average household size for A&CO worker families = 3.6
P_m^t	=	Population in military personnel category resident in communities in year t
A_m	=	Average household size for military families = 3.4
P_o^t	=	Population in civilian operations category resident in communities in year t
A_o	=	Average household size for civilian operations households = 2.8
P_d^t	=	Population in indirect employment category resident in communities in year t
and A_d	=	Average household size for indirect worker households = 2.8

TOTAL HOUSING UNIT REQUIREMENTS (TABLE 2.2-2)

The total number of housing units required by M-X-related in-migrant households are shown in the table year-by-year from 1982 through 1994 for each of the three types of residential structures. Housing types include two categories of permanent housing, single-unit and multiunit structures, and mobile homes. The data, which are for housing required in communities, are shown for each alternative which affects a county and exclude family and group housing provided on the operating base by the Air Force, and group housing in temporary camps to accommodate construction workers near DDA facility sites in remote areas.

Computational Equations

$$(3) \quad U_T^t = U_s^t + U_r^t + U_m^t$$

where U_T^t = Total housing units required in communities in year t

U_s^t = Number of single-family units required in year t

U_r^t = Number of units in multiunit structures required in year t

and U_m^t = Number of mobile homes required in year t

The general equation for the number of units of a given type is:

$$(4) \quad U_a^t = 1.05 \sum H_i^t S_{ai}^t$$

where U_a^t = Number of units of type "a" required in year t
 H_i^t = Number of households in the ith population category in year t
 S_{ai}^t = Proportion of demand by households in category i met by structure type "a" in year t
 1.05 = Factor accounting for a constant 5 percent vacancy rate
 n = Number of population categories = 5

For single-family units:

$$(5) \quad U_s^t = 1.05 H_c^t S_{sc}^t + H_e^t S_{se}^t + H_f^t S_{sf}^t + H_o^t S_{so}^t + H_d^t S_{sd}^t$$

where U_s^t = Number of single family units required in year t
 H_c^t = Number of base construction and A&CO worker households present in local communities in year t
 S_{sc}^t = Proportion of demand by base construction and A&CO worker households met by single-family structures in year t
 H_e^t = Number of shelter construction and A&CO households present in local communities in year t
 S_{se}^t = Proportion of demand by shelter construction and A&CO worker households met by single-family structures in year t
 H_f^t = Number of military households present in communities in year t
 S_{sf}^t = Proportion of demand by military households met by single-family structures in year t
 H_o^t = Number of civilian operations worker households present in year t
 S_{so}^t = Proportion of demand by civilian operations households met by single-family structures in year t
 H_d^t = Number of indirect worker households present in year t
 and S_{sd}^t = Proportion of demand by indirect households met by single unit structures in year t

TABLE 2.2-2. Cumulative M-X-Related Unit Requirement By Housing Type In Beaver County, Ut
Assuming Trend Baseline
(Page 1 of 2)

Alternative / Housing Type	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline Requirements	1598	1640	1685	1733	1755	1771	1787	1803	1818	1838	1859	1877	1893
Proposed Action													
Single family units	0	0	67	408	659	1127	1422	1364	1045	872	872	872	872
Multi-family units	0	0	60	259	422	650	689	516	348	291	291	291	291
Mobile homes	52	240	957	2591	3345	2638	1403	702	348	291	291	291	291
Total M-X related	52	240	1083	3258	4426	4415	3514	2582	1741	1453	1453	1453	1453
M-X plus baseline	1650	1880	2768	4991	6181	6186	5301	4385	3559	3292	3312	3330	3346
Alternative 1													
Single family units	0	0	3	18	93	151	163	177	185	182	182	182	182
Multi-family units	0	0	2	11	60	86	78	66	62	61	61	61	61
Mobile homes	52	240	533	1088	1080	416	150	88	62	61	61	61	61
Total M-X related	52	240	538	1116	1233	654	390	331	308	304	303	303	303
M-X plus baseline	1650	1880	2223	2849	2988	2425	2177	2134	2126	2142	2162	2180	2195
Alternative 2													
Single family units	0	0	0	0	0	0	0	0	0	0	0	0	0
Multi-family units	0	0	0	0	0	0	0	0	0	0	0	0	0
Mobile homes	52	240	538	1100	1107	396	78	43	43	43	43	42	42
Total M-X related	52	240	538	1100	1107	396	78	43	43	43	43	42	42
M-X plus baseline	1650	1880	2223	2833	2862	2167	1864	1846	1860	1881	1902	1920	1935
Alternative 3													
Single family units	9	34	44	74	200	264	270	313	290	264	261	260	260
Multi-family units	5	25	36	42	121	140	127	119	97	88	87	87	87
Mobile homes	228	506	453	1315	1374	593	327	163	97	88	87	87	87
Total M-X related	242	565	533	1432	1695	996	724	595	484	441	435	434	434
M-X plus baseline	1840	2204	2218	3165	3450	2767	2511	2398	2302	2279	2293	2311	2326
Alternative 4													
Single family units	11	33	38	74	177	267	271	291	283	263	261	260	260
Multi-family units	7	24	29	41	106	142	128	110	94	88	87	87	87
Mobile homes	106	388	709	1295	1308	612	240	150	94	88	87	87	87
Total M-X related	124	445	776	1410	1591	1020	640	551	472	439	435	434	434
M-X plus baseline	1722	2085	2461	3143	3346	2791	2426	2354	2290	2277	2293	2311	2326

Source HDR Sciences. 28-AUG-81

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TABLE 2.2-2. Cumulative MX-Related Unit Requirement By Housing Type in Beaver County, Ut.
Assuming Trend Baseline
(Page 2 of 2)

Alternative / Housing Type	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 5													
Single family units	188.	519.	650.	1054	1135.	1343.	1316.	1308.	1203.	1125.	1125.	1125.	1125.
Multi-family units	133.	402.	534.	640.	679.	694.	611.	486.	401.	375.	375.	375.	375.
Mobile homes	1206.	2872.	3829.	5244.	4616.	2658.	1217.	635.	401.	375.	375.	375.	375.
Total M-X related	1528.	3793.	5013.	6939.	6430.	4694.	3144.	2429.	2004.	1876.	1875.	1875.	1875.
M-X plus baseline	3126.	5433.	6698.	8672.	8185.	6465.	4931.	4232.	3822.	3714.	3734.	3753.	3768.
Alternative 6													
Single family units	190.	518.	643.	1053.	1102.	1326.	1285.	1261.	1180.	1125.	1125.	1125.	1125.
Multi-family units	135.	401.	528.	640.	657.	684.	596.	467.	393.	375.	375.	375.	375.
Mobile homes	1085.	2755.	4085.	5224.	4499.	2629.	1098.	607.	393.	375.	375.	375.	375.
Total M-X related	1410.	3674.	5256.	6916.	6259.	4639.	2980.	2335.	1967.	1876.	1875.	1875.	1875.
M-X plus baseline	3008.	5313.	6941.	8650.	8014.	6410.	4766.	4138.	3785.	3714.	3734.	3753.	3768.
Alternative 8A													
Single family units	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Multi-family units	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Mobile homes	0.	174.	406.	1006.	1008.	725.	268.	15.	0.	0.	0.	0.	0.
Total M-X related	0.	174.	406.	1006.	1008.	725.	268.	15.	0.	0.	0.	0.	0.
M-X plus baseline	1598.	1813.	2091.	2739.	2763.	2496.	2054.	1818.	1838.	1859.	1877.	1893.	

Source: HDR Sciences, 28-AUG-81

C10262

Similarly, for required housing units in multiunit structures:

$$(6) \quad U_r^t = 1.05 \left[H_c^t S_{rc}^t + H_e^t S_{re}^t + H_f^t S_{rf}^t + H_o^t S_{ro}^t + H_d^t S_{rd}^t \right]$$

and for mobile homes:

$$(7) \quad U_m^t = 1.05 \left[H_c^t S_{inc}^t + H_e^t S_{ine}^t + H_f^t S_{inf}^t + H_o^t S_{mo}^t + H_d^t S_{md}^t \right]$$

NET ANNUAL HOUSING UNITS REQUIRED (TABLE 2.2-3)

This table indicates the number of additional dwelling units that must be provided or the number of surplus units that must be removed in a particular year. For permanent housing, i.e., single-family and multi-unit residences, the number indicates the additional dwellings that would have to be constructed by the private home building industry during that year, while a negative sign indicates an inventory of surplus units in a particular year. Similarly the table indicates the number of additional mobile homes that would have to be delivered and for which sites would have to be prepared in a particular year, while a negative sign represents the number of surplus mobile homes that could be removed during the year. For each structure type, the data are obtained by computing the difference between the total number of units required in the year and the total number required in the previous year. For example, the number of additional single-family units required in 1987, 468 houses, is obtained by subtracting 659 from 1,127. The data in the table should be interpreted as conditional forecasts of changes in housing supply.

CUMULATIVE NUMBER OF HOUSING UNITS REQUIRED BY M-X AND OTHER CONCURRENT PROJECTS (TABLE 2.2-4)

The number of housing units required by the trend-growth baseline population, the number required by the baseline population assuming other large-scale projects in the county, and the percent increase over the requirements of the trend-growth population are shown in the section of the table labeled baseline requirements. The needs for additional housing units induced by large-scale projects other than M-X can be computed by subtracting the trend-growth from the high growth baseline requirements.

For the Proposed Action and each alternative affecting the county, M-X-related total requirements for housing units are shown for both the trend-growth and high-growth baselines. Housing needs induced by the M-X project are slightly lower for the high-growth baseline, due to lower M-X-related labor force and population in-migration. The percent change above the trend-growth baseline is presented for both net additional M-X-related housing requirements and for housing needs generated by M-X and other concurrent large-scale projects.

TABLE 2.2-3. NET ANNUAL MX-RELATED HOUSING UNIT REQUIREMENTS BY HOUSING TYPE IN BEAVER COUNTY, UT
ASSUMING TREND BASELINE
(PAGE 1 OF 2)

ALTERNATIVE / HOUSING TYPE	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASELINE REQUIREMENTS	1598.	41.	46.	48.	22.	16.	16.	15.	21.	21.	19	15.	
PROPOSED ACTION													
SINGLE FAMILY UNITS	0.	0.	67.	341.	251.	468.	295.	-58.	-319.	-173.	0	0	0
MULTI-FAMILY UNITS	0.	0.	60.	200.	163.	228.	39.	-173.	-168.	-58.	0	0	0
MOBILE HOMES	52.	188.	717.	1634.	754.	-707.	-1235.	-701.	-354.	-58.	0	0	0
TOTAL M-X RELATED	52.	188.	843.	2175.	1168.	-10.	-902.	-932.	-840.	-288.	0	0	0
M-X PLUS BASELINE	1650.	229.	889.	2223.	1190.	5.	-886.	-916.	-826.	-267.	20	19.	15.
ALTERNATIVE 1													
SINGLE FAMILY UNITS	0.	0.	3.	15.	75.	59.	12.	13.	8.	-2.	0	0	0
MULTI-FAMILY UNITS	0.	0.	2.	9.	50.	26.	-9.	-11.	-5.	-1.	0	0	0
MOBILE HOMES	52.	188.	293.	554.	-7.	-664.	-267.	-62.	-26.	-1.	0	0	0
TOTAL M-X RELATED	52.	188.	298.	578.	117.	-579.	-263.	-60.	-23.	-4.	-1.	0	0
M-X PLUS BASELINE	1650.	229.	343.	626.	139.	-564.	-248.	-44.	-8.	16.	20.	18.	15.
ALTERNATIVE 2													
SINGLE FAMILY UNITS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0	0	0
MULTI-FAMILY UNITS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0	0	0
MOBILE HOMES	52.	188.	298.	562.	7.	-711.	-318.	-35.	0.	0.	0	0	0
TOTAL M-X RELATED	52.	188.	298.	562.	7.	-711.	-318.	-35.	0.	0.	0	0	0
M-X PLUS BASELINE	1650.	229.	343.	610.	29.	-695.	-302.	-18.	14.	21.	21.	18.	15.
ALTERNATIVE 3													
SINGLE FAMILY UNITS	9.	25.	11.	30.	125.	64.	6.	43.	-23.	-26.	-4.	-1.	0
MULTI-FAMILY UNITS	5.	20.	11.	6.	79.	19.	-12.	-8.	-22.	-9.	-1.	0	0
MOBILE HOMES	228.	278.	-53.	863.	59.	-782.	-266.	-164.	-66.	-9.	-1.	0	0
TOTAL M-X RELATED	242.	323.	-32.	899.	264.	-699.	-272.	-129.	-111.	-43.	-6.	-1.	0
M-X PLUS BASELINE	1840.	365.	14.	947.	286.	-683.	-256.	-113.	-96.	-23.	15.	17.	15.
ALTERNATIVE 4													
SINGLE FAMILY UNITS	11.	22.	5.	36.	104.	90.	4.	20.	-8.	-20.	-3.	-1.	0
MULTI-FAMILY UNITS	7.	18.	5.	12.	65.	35.	-14.	-18.	-16.	-7.	-1.	0	0
MOBILE HOMES	106.	282.	320.	587.	12.	-696.	-371.	-91.	-55.	-7.	-1.	0	0
TOTAL M-X RELATED	124.	322.	331.	634.	181.	-571.	-381.	-89.	-33.	-4.	-1.	0	0
M-X PLUS BASELINE	1722.	363.	376.	682.	203.	-555.	-365.	-73.	-64.	-12.	16.	17.	15.

SOURCE: HDR SCIENCES. 18-AUG-81

CTO310

TABLE 2.2-3. NET ANNUAL M-X-RELATED HOUSING UNIT REQUIREMENTS BY HOUSING TYPE IN BEAVER COUNTY, UT.
ASSUMING TREND BASELINE
(PAGE 2 OF 2)

ALTERNATIVE / HOUSING TYPE	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
ALTERNATIVE 5													
SINGLE FAMILY UNITS	188.	331.	131.	404.	81.	208.	-27.	-8.	-106.	-77.	0.	0.	0.
MULTI-FAMILY UNITS	133.	269.	132.	106.	39.	15.	-82.	-126.	-85.	-26.	0.	0.	0.
MOBILE HOMES	1206.	1666.	957.	1415.	-628.	-1958.	-1441.	-582.	-234.	-26.	0.	0.	0.
TOTAL M-X RELATED	1528.	2266.	1220.	1925.	-509.	-1736.	-1550.	-715.	-425.	-129.	0.	0.	0.
M-X PLUS BASELINE	3126.	2307.	1265.	1973.	-487.	-1720.	-1534.	-699.	-410.	-108.	21.	18.	15.
ALTERNATIVE 6													
SINGLE FAMILY UNITS	190.	328.	125.	410.	49.	224.	-41.	-24.	-81.	-55.	0.	0.	0.
MULTI-FAMILY UNITS	135.	266.	127.	112.	18.	26.	-88.	-129.	-74.	-18.	0.	0.	0.
MOBILE HOMES	1085.	1670.	1330.	1139.	-725.	-1870.	-1530.	-492.	-213.	-18.	0.	0.	0.
TOTAL M-X RELATED	1410.	2264.	1582.	1660.	-658.	-1620.	-1659.	-644.	-368.	-92.	0.	0.	0.
M-X PLUS BASELINE	3008.	2305.	1628.	1708.	-636.	-1604.	-1644.	-628.	-353.	-71.	21.	18.	15.
ALTERNATIVE 8A													
SINGLE FAMILY UNITS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MULTI-FAMILY UNITS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MOBILE HOMES	0.	174.	232.	601.	1.	-282.	-458.	-252.	-15.	0.	0.	0.	0.
TOTAL M-X RELATED	0.	174.	232.	601.	1.	-282.	-458.	-252.	-15.	0.	0.	0.	0.
M-X PLUS BASELINE	1598.	215.	278.	649.	23.	-267.	-442.	-236.	-1.	21.	21.	19.	15.

SOURCE: HDR SCIENCES. 18-AUG-81

C10310

TABLE 2.2.1. Cumulative Baseline Housing Unit Requirements In Local Communities, And Cumulative Total Housing Unit Requirements Related To M-X And Other Projects In Beaver County, Ut.
(Page 1 of 2)

Alternative	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline Requirements													
With trend growth (TG)	1598	1640	1685	1733	1755	1771	1787	1803	1818	1838	1859	1877	1893
With other projects (HG)	2247	2973	3375	3772	4112	3439	3334	3368	3419	3476	3531	3581	3626
Above TG	40.6	81.3	100.3	117.6	134.3	94.2	86.6	86.8	88.1	89.1	90.0	91.1	91.6
Proposed Action													
M-X housing with TG	52	240	1083	3258	4426	4415	3514	2582	1741	1453	1453	1453	1453
Above TG baseline	3.2	14.6	64.3	188.0	252.2	249.3	196.7	143.2	95.8	79.1	78.2	77.4	76.8
M-X housing with HG	48	233	104.9	3216.	4371	4377	3478	2548	1707	1443	1443	1442	1442
M-X + other projects	700	1573	277.3	5297	6782	6084	5061	4146	3343	3091	3125	3163	3186
Above TG baseline	43.8	96.0	164.5	305.6	386.4	343.5	283.2	230.0	183.9	168.2	168.1	168.5	168.3
Alternative 1													
M-X housing with TG	52	240	538	1116	1233	654	390	331	308	304	303	303	303
Above TG baseline	3.2	14.6	31.9	64.4	70.3	36.9	21.9	18.3	17.0	16.5	16.3	16.1	16.0
M-X housing with HG	48	233	52.9	1090	1185	618	354	297	274	268	268	266	265
M-X + other projects	700	1573	2227	3155	3590	2322	1937	1895	1910	1942	1976	2013	2035
Above TG baseline	43.8	96.0	132.2	182.0	204.5	131.1	108.4	105.1	105.1	105.6	106.3	107.2	107.5
Alternative 2													
M-X housing with TG	52	240	538	1100	1107	396	78	43	43	43	43	42	42
Above TG baseline	3.2	14.6	31.9	63.5	63.0	22.3	4.3	2.4	2.4	2.3	2.3	2.3	2.2
M-X housing with HG	48	233	52.9	1089	1095	360	53	33	33	32	32	32	31
M-X + other projects	700	1573	2227	3139	3463	2064	1625	1608	1645	1681	1715	1753	1775
Above TG baseline	43.8	96.0	132.2	181.1	197.3	116.6	90.9	89.2	90.5	91.4	92.3	93.4	93.8
Alternative 3													
M-X housing with TG	241	565	533	1432	1695	996	724	595	484	441	435	434	434
Above TG baseline	15.1	34.5	31.6	82.6	96.6	56.2	40.5	33.0	26.6	24.0	23.4	23.1	22.9
M-X housing with HG	229	538	49.9	1385	1641	958	689	562	450	405	398	397	396
M-X + other projects	890	1898	2222	3471	4052	2664	2271	2160	2086	2078	2107	2144	2166
Above TG baseline	55.7	115.8	131.9	200.2	230.9	150.5	127.1	119.8	114.8	113.1	113.4	114.2	114.5

Source: HDR Sciences. 3-SEP-81

CT 1054

TABLE 2.2-1 Cumulative Baseline Housing Unit Requirements In Local Communities, And Cumulative Total Housing Unit Requirements Related To M-X And Other Projects In Beaver County, Ut.
 (Page 2 of 2)

Alternative	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 4													
M-X housing with TG	124	445	776	1410	1591	1020	640	551	472	439	435	434	434
Above TG baseline	7.7	27.2	46.0	81.3	90.6	57.6	35.8	30.6	26.0	23.9	23.4	23.1	22.9
M-X housing with HG	110	418	741	1363	1537	982	606	517	438	404	398	397	396
M-X + other projects	772	1778	2465	3449	3948	2689	2187	2116	2074	2077	2107	2144	2166
Above TG baseline	48.3	108.5	146.3	199.0	224.9	151.8	122.4	117.3	114.1	113.0	113.4	114.2	114.5
Alternative 5													
M-X housing with TG	1528	3793	5013	6939	6430	4694	3144	2429	2004	1876	1876	1875	1875
Above TG baseline	95.6	231.4	297.5	400.3	366.4	265.1	176.0	134.7	110.3	102.0	100.9	99.9	99.1
M-X housing with HG	1514	3766	4974	6891	6376	4656	3109	2419	1994	1865	1865	1865	1864
M-X + other projects	2176	5126	6703	8977	8787	6363	4691	3994	3606	3513	3548	3585	3608
Above TG baseline	136.1	312.7	397.8	518.0	500.6	359.3	262.6	221.5	198.4	191.1	190.9	191.0	190.6
Alternative 6													
M-X housing with TG	1410	3674	5256	6916	6259	4639	2980	2335	1967	1876	1876	1875	1875
Above TG baseline	88.2	224.1	311.9	399.1	356.6	261.9	166.8	129.5	108.2	102.0	100.9	99.9	99.1
M-X housing with HG	1397	3647	5217	6870	6204	4600	2946	2325	1957	1865	1865	1865	1864
M-X + other projects	2058	5007	6946	8955	8615	6307	4526	3900	3569	3513	3548	3585	3608
Above TG baseline	128.8	305.4	412.2	516.7	490.9	356.2	253.3	216.3	196.4	191.1	190.9	191.0	190.6
Alternative 8A													
M-X housing with TG	0	174	406	1006	1008	725	268	15	0	0	0	0	0
Above TG baseline	0.0	10.6	24.1	58.1	57.4	41.0	15.0	0.9	0.0	0.0	0.0	0.0	0.0
M-X housing with HG	0	167	397	996	995	717	236	0	0	0	0	0	0
M-X + other projects	649	1507	2095	3045	3364	2394	1814	1580	1602	1638	1672	1710	1733
Above TG baseline	40.6	91.9	124.3	175.7	191.7	135.2	101.5	87.6	88.1	89.1	90.0	91.1	91.6

Source: HDR Sciences, 3-SEP-81

CT1054

3.0 COMMUNITY LAND USE AND INFRASTRUCTURE MODEL GROUP

3.1 MODEL STRUCTURE AND DESCRIPTION

This submodel provides quantitative projections of the quantity of land that is needed for conversion to various urban uses such as housing, retail trade, commercial-office, industrial, streets and highways, and public-institutional, in order to accommodate the M-X-related growth in population. The model, in essence, forecasts short-term demand for additional land by the various urban use activities rather than changes in the supply of land in the use categories. Changes in the actual supply or quantity of land devoted to the urban uses would be a function of the economic value of land in the uses, actual market prices of land, the expected duration of the M-X-induced demand, and the physical characteristics or constraints of the available supply of developable land, as well as numerous policy considerations. Local, state, and even federal policies, including decisions about zoning and about capital investments in infrastructure such as water and sewer facilities, are likely to exert a major influence on the location and timing as well as the quantity of land converted to the various urban uses. In addition, in some communities the location and quantity of available developable land may be constrained by the pattern of federal and state ownership. Requirements for infrastructure related to land development, such as streets and highways and utilities, are projected in the model as a function of land use changes. Various intermediate outputs, including volume of retail sales and capital costs of infrastructure, are available for analysis or as inputs to other submodels. The computational methods and assumptions, which are different for each category of land use, are described in the following sections.

RESIDENTIAL LAND USE (3.1.1)

Requirements for additional land for residential use are projected for three density categories corresponding to the three housing types--single-family and multiunit permanent housing and mobile homes. The total requirement for residential land in a given year is computed as the sum of the products of the number of housing units and corresponding density factors for the three housing types. These density factors are assumed to be three units per acre for single-family permanent housing, ten units per acre for multiunit permanent housing, and five units per acre for mobile homes (Murphy/Williams, 1978). Although actual residential densities and the number of housing units allowed per acre by zoning codes vary to some extent from one community to another, in the model these factors are constant for all communities. Total residential construction costs, excluding land, for permanent single-family and multiunit housing are computed as a function of the numbers of each type of unit required, average size for each type of unit (assumed to be 1,200 and 900 sq ft, respectively, for single-family and multiunit housing), and the construction costs per sq ft for each structure type. These costs were estimated in 1978 as \$30 and \$25, respectively, based on conversations with local developers. Construction costs which are expressed in this document in 1978 dollars are converted within the model algorithm to current 1980 dollars by the application of an appropriate inflation factor (Economic Report of the President, 1981). In addition, it is assumed that the costs of both construction materials and labor in the region will become inflated due directly to M-X activity. An attempt is made to reflect this likely inflationary trend by increasing construction costs by an additional 20 percent. This adjustment is made for construction costs associated

with other land uses: retail trade, office and commercial, industrial, streets and highways, and public and institutional land uses.

RETAIL LAND USE (3.1.2)

Retail use includes land devoted to retail sales of food, apparel and appliances, general merchandise, drug stores, furniture, hardware, eating and drinking establishments, auto dealers, gas stations, and miscellaneous retail goods. Retail trade land requirements generated by the M-X project are a function of the volume of local retail expenditures by M-X-related population and the quantity of building space necessary to accommodate that sales volume. All categories of M-X-related population would generate retail expenditures locally. The model incorporates distinctions among population categories in both the quantity of retail expenditures, which is a function of income, and the proportion of retail purchases that are local (in the county or other region being examined) rather than outside the region where impacts are being projected. It is assumed that a much higher share (75 percent) of retail purchases would be local for population groups residing in communities, whereas the share would be lower (20 percent) for those living in construction camps. These latter workers would be either single or unaccompanied by their families so that a major share of their retail expenditures is likely to occur near the residential location of their families rather than near M-X construction sites. Similarly, military personnel are assumed to purchase a large share of their retail goods onbase, because of the favorable price and tax treatment, rather than in the local community. The proportion of retail purchases made in local communities varies for military personnel, depending on whether they live on or off base, with a somewhat higher local share for those who live in the community rather than onbase. The proportions of retail expenditures that are estimated to be in local communities are presented in Table 3.1.2-1.

The computational steps used in projecting land requirements at the county level for retail trade may be summarized as follows:

1. Aggregate disposable personal income is computed for each employment-related population category resident in the county. This variable is an output of the economic model.
2. The total volume of expenditures for retail goods is computed by multiplying disposable income by the proportion of income spent on retail goods, which is estimated to be 31 percent (obtained from consumer price index weights used by the U.S. Department of Commerce) for all employment categories.
3. That portion of retail expenditures which is local is computed for each population category and summed to obtain total local retail sales.
4. The dollar volume of retail sales is converted into building space needed to provide such a sales volume. The parameter applied is one of average sales volume per sq ft of gross leasable area. The value of this parameter is estimated to be \$87 per sq ft (1978 dollars), based on data for neighborhood- and community-size shopping centers in the western United States (Urban Land Institute, 1978a).

Table 3.1.2-1. Estimated proportions of retail expenditures spent locally¹, by employment category and place of residence.

Employment Category	Place of residence		
	Community	Base	Camp
Construction - Base	0.75	0.25	0.20
Construction - Shelter	0.75	0.25	0.20
Assembly and Checkout - Base	0.75	0.25	0.20
Assembly and Checkout - Shelter	0.75	0.25	0.20
Operation - Military	0.30	0.20	0.0
Operation - Civilian	0.75	0.0	0.0
Indirect Workers	0.75	0.0	0.0

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¹Excludes expenditures by military operations population onbase.

Source: U. S. Air Force, Headquarters Air Force Engineering and Services Center, Tyndall AFB, Florida. Personal communication from W. Allen Nixon, economist, 24 July 1980.

5. Land requirements are determined as a function of the building space needed, with a factor of four applied. The space not covered by buildings is to accommodate parking, landscaping, and ancillary activities (Urban Land Institute 1978b).
6. The procedure is repeated for each geographical location of employment (base, construction camps, and communities) and is subsequently summed to obtain total retail trade land requirements.
7. Construction costs for retail building are assumed to be \$30 per sq ft (1978 dollars), based on conversations with local builders. Construction costs, which are converted to 1980 dollars in the model, are increased an additional 20 percent to reflect likely increases in the relative prices of labor and materials as a result of the M-X project.

When the model is run at the individual community level, needs for additional land in retail uses is computed as the product of the total county need and the proportion of M-X in-migrants to the county that are allocated to the particular community.

OFFICE AND COMMERCIAL LAND USES (3.1.3)

Office and commercial land use is a broad category which encompasses personal and business services, transient housing (hotels and motels), wholesale trade, amusement and recreation services, repair services, and other miscellaneous services. The procedure used to project land required for these uses is identical to that used for retail trade except for the following modifications in assumptions: (1) the percent of disposable income spent on services, which by definition are obtained in commercial and office buildings, is 20 percent (estimated from consumer price index weights used by the U.S. Department of Commerce, 1979); (2) each square foot of gross building area would generate \$60 of service transactions (in 1978 dollars); (3) ancillary land requirements are 2.5 times the area devoted to buildings (Murphy/Williams, 1978); and (4) average construction costs are \$35 per sq ft (estimated based on conversations with local builders in 1978 dollars). Construction costs, which are converted to 1980 dollars in the model, are increased an additional 20 percent to reflect likely increases in the relative prices of building materials and labor as a result of the M-X project. When the model is applied at the community level, needs for additional land devoted to commercial uses is computed at the county level and then allocated to individual communities in proportion to their share of the M-X in-migrant population.

INDUSTRIAL LAND USE (3.1.4)

Industrial land use requirements are calculated in a series of five steps: (1) the number of industrial employees is estimated to be 10 percent of total indirect employment forecasted in the county, (2) each industrial employee is assumed to require 550 sq ft of building space, (3) each industrial employee requires 260 sq ft of parking space, (4) each employee requires 0.2 times the building and parking area for space devoted to ancillary uses, and (5) land consumption calculated in Steps 2, 3, and 4, above are summed to obtain total land area needed (Murphy/Williams, 1978). Construction costs for industrial buildings are estimated to average \$25 per sq ft (in 1978 dollars), based on conversations with builders in the area. Again, costs

are converted to 1980 dollars and increased 20 percent to account for changes in the relative prices of inputs to construction. Land requirements, which are computed at the county level, are allocated to individual communities based upon their share of the M-X in-migrant population.

STREETS AND HIGHWAYS (3.1.5)

This submodel projects the length of streets required for three categories of streets and the quantity of land required to accommodate community streets and highways. In the model, street requirements are a function of residential and non-residential land development, with varying requirements for each type of housing. The computational steps (Murphy/Williams, 1978) are as follows:

1. Lengths of three types of streets, arterials, collectors, and minor streets are computed for three types of housing units--single-family, multiunit housing, and mobile homes--by multiplying the number of each type of unit by the required linear feet per unit for each street type. These factors are shown in Table 3.1.5-1.
2. Total residentially-related requirements for each street category are the sum of the requirements for single-family, multiunit, and mobile home housing types.
3. Nonresidential street requirements are a function of residential streets, with a factor of 1.76 for arterials and 1.1 for collectors and minor local streets.
4. Total street length required for each of the three street types is the sum of the residential and nonresidential requirements.
5. Land area required to accommodate streets and highways is computed by multiplying street length required for each street type by the right-of-way width (100, 60, and 50 ft, respectively), and by dividing this product by appropriate conversion factors to convert the area to acres and hectares.
6. Street construction costs are computed by multiplying each street length by estimated construction cost per foot, \$55, \$40, and \$35 (1978 dollars), respectively, for each street type. Construction costs, which are estimates based upon conversations with contractors in the area, are converted to 1980 dollars in the model and increased 20 percent to reflect changes in the relative price of construction inputs such as materials and labor.

PUBLIC AND INSTITUTIONAL LAND USES (3.1.6)

Land requirements for three types of public facilities other than streets are projected: schools, parks, and solid waste disposal sites. Land needed for schools is projected by multiplying the number of pupils by a land requirement per pupil, assumed to be 0.04 acres per pupil (Utah State Office of Education, 1980). Land requirements are computed separately for three grade levels--K-6, 7-9, 10-12--and summed to obtain total requirements. Land requirements are projected for three

Table 3.1.5-1. Estimated linear feet of streets needed per housing unit for three street categories, by type of housing unit.

Type of Housing Unit	Street Type		
	Afferial	Collector	Minor
Single-family	6.0	7.00	47.0
Multi-unit	5.0	13.50	10.0
Mobile homes	5.5	17.25	22.0

T1202/9-22-81

Source: Murphy/Williams, Socioeconomic Impact Assessment:
A Methodology Applied to Synthetic Fuels
U. S. Department of Energy, 1978, 1978).

types of local parks, (playgrounds, neighborhood parks, and community parks) by multiplying the population residing in local communities times per capita factors for each park type. These parameters, which are the National Park and Recreation Association's standards for urban communities, are 0.001 acres per person for playgrounds, 0.0013 acres per person for neighborhood parks, and 0.004 acres per person for community parks and open space. It is likely that these standards would overestimate needs for developed community parkland in the study areas because of their rural character and the abundance of open countryside and dispersed recreation opportunities. For solid waste disposal it is assumed that each person residing in local communities generates a need for 0.000015 acres per year for sanitary landfill, assuming that wastes are accumulated to a depth of 10 ft (Architects/Planners Alliance, Inc., 1979).

PUBLIC AND PRIVATE UTILITIES (3.1.7)

This submodel projects the costs of constructing utility infrastructure associated with residential and nonresidential development as well as systemwide and total utility costs. The costs of providing sanitary sewers, water distribution, and electricity to new residential development is a function of the number of housing units, with separate factors for each type of dwelling--single-family, multiunit, and mobile home--as shown in Table 3.1.7-1. Total residential-related utility development costs for each utility are computed by multiplying the appropriate cost factor per unit times the number of housing units of each type and summing across housing types.

Nonresidential utility costs are assumed to be a constant proportion of residential utility costs, with factors of 0.40 for sanitary sewage and 0.20 for water and electricity. Systemwide development costs, such as for trunk sewers, wastewater treatment facilities, and water storage facilities, are computed as a constant proportion of the sum of residential and nonresidential utility costs. The proportions are 0.40 for sanitary sewage and water, and 0.30 for electricity (Murphy/Williams, 1978). Utility development costs are an intermediate output which provide input data for the public finance and economic models.

INDIRECT CAPITAL COSTS (RELATED INVESTMENT) (3.1.8)

The purpose of this submodel is to compute total indirect or related capital costs by summing construction costs for off-base public and private facilities estimated by other submodels, including housing, retail and office buildings, industrial buildings, public and institutional buildings, streets and highways, and utilities. All of these capital costs are treated as a project-related change in final demand and form a feedback loop to the RIMS and econometric models where the "multiplier" effects of these expenditures are used to compute additional earnings and indirect employment. That portion of indirect capital costs which is borne by local government becomes an input to the fiscal impact analysis in the local government sector submodel. For a more detailed description of assumptions and computational methods for public capital costs, the reader should refer to the separate technical report on the public finance models.

3.2 EXAMPLE LAND USE MODEL OUTPUTS AND COMPUTATION PROCEDURES

Illustrative community land use outputs are presented in Tables 3.2-1 and 3.2-2 which indicate cumulative and net annual change in requirements, in acres, for

Table 3.1.7-1. Estimated utility construction costs
in 1978 dollars¹ per housing unit
for three types of housing.

Housing Unit Type	Utility Costs Per Unit		
	Sanitary Sewage	Water	Gas and Electricity
Single family	1,000	650	800
Multiple family	400	260	320
Mobile homes	600	390	384

T1203/10-2-81

¹Converted to 1980 dollars in the model.

Source: HDR Sciences, calculations based on planning
factors recommended by Murphy/Williams,
1978.

five categories of urban land. These categories are: (1) permanent homes, including single-family and multiunit residential land uses; (2) mobile home residential land use; (3) retail, commercial, and industrial land uses; (4) streets and highways; and (5) public and institutional land uses. Unsummarized model output, shown in Appendix A-1 for the Proposed Action in Beaver County, Utah, provides considerably more detail in terms of land use categories.

The cumulative data in Table 3.2-1 represent the total M-X-related requirements for additional land in the various urban uses that exist in each year from 1982 through 1994, while the annual data show the quantities of land that would need to be converted to or from the use category during a particular year. Positive signs (for the data in Table 3.2-2) represent requirements for land to be converted to a particular use and negative signs mean that a surplus of land in a use exists which could potentially be converted back to nonurban use. Requirements for additional land in the peak year by the various urban use activities greatly exceed the long-term or permanent requirements. It is likely that a major share of the short-lived requirements in small communities during the peak construction period would be met by temporary facilities such as mobile homes and unpaved streets, with the land used for these short-term facilities reverting back to nonurban use after the construction-related population migrates out of an area upon completion of construction activities.

Computation Equations

For total land uses:

$$(8) \quad L_C^t = H^t + M^t + C^t + S^t + G^t$$

where L_C^t = Total community land requirements (in acres) in year t

H^t = Acres of land for permanent residential use required in year t

M^t = Acres of land for mobile homes required in year t

C^t = Acres of land for commercial uses required in year t

S^t = Acres of land for streets and highways required in year t

and G^t = Acres of land for public and institutional uses required in year t

For residential land uses

$$(9) \quad H^t = U_S^t D_S + U_R^t D_R$$

where U_S^t = Number of single-family dwellings required in year t

D_S = Density factor for single-family housing = 3 units per acre

U_R^t = Number of units required in multiunit structures in year t

TABLE 3.2-1. Cumulative MX-Related Land Requirements (Acres) By Use Category In Beaver County, Ut.

Alternative 1 with scenario

(Part 1 of 2)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Perpetual Alternative												
Retail/Comm/Homes	0.0	0.0	27.0	159.6	257.8	436.6	537.6	499.8	375.5	317.4	317.3	317.3
Mobile Homes	46.6	185.5	511.7	661.4	523.1	277.6	138.5	68.3	57.7	57.7	57.7	57.7
Subtotal	46.6	185.5	671.5	919.2	959.8	815.2	638.2	443.8	375.1	375.0	375.0	375.0
Sust. and Indus.	1.6	6.4	19.2	55.3	62.6	58.3	55.0	49.8	43.9	35.2	33.0	32.9
Govt. and Hwy.	6.7	32.1	14.2	445.7	665.3	613.0	497.5	374.7	255.1	215.6	215.5	215.5
Public Institutional	3.0	14.3	52.5	160.1	204.3	186.5	141.2	103.0	73.2	63.9	63.9	63.9
Total	20.0	99.4	128.5	132.4	179.2	181.7	160.8	1165.8	816.1	689.9	687.5	687.5

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Perpetual Alternative												
Retail/Comm/Homes	0.0	0.0	1.1	6.0	34.6	55.9	57.0	58.9	60.2	59.1	58.9	58.6
Mobile Homes	46.6	105.0	213.2	208.4	78.6	26.8	15.7	10.9	10.7	10.7	10.6	10.6
Subtotal	46.6	105.0	219.2	243.0	134.6	83.8	74.6	71.2	69.8	69.6	69.2	69.0
Retail/Comm/Indus	1.6	14.1	29.7	27.0	10.6	4.5	3.4	3.2	3.2	3.2	3.2	3.2
Sust. and Hwy.	6.7	32.1	72.9	150.3	163.3	86.5	50.9	43.7	40.9	40.0	39.8	39.7
Public Institutional	3.0	14.3	32.4	66.8	70.4	31.4	16.2	14.1	13.2	13.0	13.0	13.0
Total	20.0	99.4	225.5	466.1	504.3	263.1	155.3	135.7	128.6	126.2	125.9	125.2

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Perpetual Alternative												
Retail/Comm/Homes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile Homes	46.6	105.0	217.8	218.9	72.1	10.6	6.6	6.5	6.4	6.4	6.4	6.4
Subtotal	46.6	105.0	219.2	243.0	134.6	83.8	74.6	71.2	69.8	69.6	69.2	69.0
Retail/Comm/Indus	1.6	14.1	29.7	27.0	10.6	4.5	3.4	3.2	3.2	3.2	3.2	3.2
Sust. and Hwy.	6.7	32.1	72.9	150.0	150.0	49.6	7.3	4.5	4.5	4.4	4.4	4.4
Public Institutional	3.0	14.3	32.4	66.7	67.1	20.9	2.7	1.2	1.2	1.1	1.1	1.1
Total	20.0	99.4	225.5	463.5	462.6	151.3	22.6	13.1	12.8	12.6	12.5	12.4

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Perpetual Alternative												
Retail/Comm/Homes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile Homes	46.6	105.0	217.8	218.9	72.1	10.6	6.6	6.5	6.4	6.4	6.4	6.4
Subtotal	46.6	105.0	219.2	243.0	134.6	83.8	74.6	71.2	69.8	69.6	69.2	69.0
Retail/Comm/Indus	1.6	14.1	29.7	27.0	10.6	4.5	3.4	3.2	3.2	3.2	3.2	3.2
Sust. and Hwy.	6.7	32.1	72.9	150.0	150.0	49.6	7.3	4.5	4.5	4.4	4.4	4.4
Public Institutional	3.0	14.3	32.4	66.7	67.1	20.9	2.7	1.2	1.2	1.1	1.1	1.1
Total	20.0	99.4	225.5	463.5	462.6	151.3	22.6	13.1	12.8	12.6	12.5	12.4

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Perpetual Alternative												
Retail/Comm/Homes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile Homes	43.4	96.6	81.9	255.8	266.8	113.6	61.7	30.7	18.0	16.2	15.9	15.9
Subtotal	46.4	109.4	101.9	282.1	342.0	212.0	160.0	140.6	116.9	105.4	103.5	103.5
Retail/Comm/Indus	6.7	13.4	11.2	34.1	36.3	12.7	9.8	6.2	4.8	4.4	4.4	4.4
Sust. and Hwy.	7.4	13.4	11.2	34.1	36.3	12.7	9.8	6.2	4.8	4.4	4.4	4.4
Public Institutional	3.0	10.4	25.9	62.1	93.5	45.8	33.2	26.5	21.2	19.4	19.2	19.1
Total	98.7	227.3	207.6	589.8	631.4	405.2	30.3	255.9	210.1	189.8	186.6	185.9

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Perpetual Alternative												
Retail/Comm/Homes	3.6	12.3	14.3	25.9	66.3	99.6	98.0	101.6	95.3	88.9	87.6	87.3
Mobile Homes	19.0	73.1	135.9	251.8	253.4	117.4	45.5	28.0	17.5	16.2	15.9	15.9
Subtotal	22.7	85.4	150.2	277.7	319.7	217.0	143.5	129.6	113.8	105.0	103.5	103.5
Retail/Comm/Indus	11.5	10.6	18.4	33.0	30.1	13.5	6.3	5.5	4.7	4.4	4.4	4.4
Sust. and Hwy.	15.2	57.7	102.2	186.4	213.1	138.1	87.0	76.1	65.4	60.4	59.5	59.3
Public Institutional	6.2	23.2	42.3	79.3	86.9	48.2	28.1	24.2	20.7	19.4	19.2	19.1
Total	47.7	176.9	313.1	578.5	649.7	416.8	264.9	235.5	204.6	189.1	186.6	185.9

Sources: HDR Sciences, 27-AUG-81

C1039

TABLE 3.2-1. Cumulative MX-Related Land Requirements (Acres) By Use Category In Beaver County, Ut
Assuming High Baseline
(Page 2 of 2)

Alternative / Land Use Category	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 5													
Permanent homes	75.4	211.8	267.6	412.1	442.3	513.0	495.4	482.6	438.7	410.4	410.3	410.2	410.2
Mobile homes	234.4	570.2	739.9	1041.9	915.5	527.0	239.7	126.9	79.8	74.6	74.6	74.6	74.6
Subtotal	314.6	782.1	1027.5	1454.1	1357.8	1010.0	735.1	609.1	518.5	485.0	484.9	484.8	484.7
Retail/Comm / Indus.	23.4	53.0	67.6	104.1	107.6	91.3	73.4	57.9	47.6	41.7	44.5	44.5	44.5
Sites and highways	209.3	519.1	684.2	957.5	887.5	656.9	446.3	366.5	298.0	278.8	278.7	278.7	278.6
Public/Institutional	74.3	174.7	215.6	314.5	298.8	212.8	144.9	118.2	92.2	84.3	84.3	84.3	84.3
Total	629.7	1529.0	1987.9	2870.1	2651.7	2001.0	1399.7	1141.7	956.3	892.9	892.5	892.3	892.1
Alternative 6													
Permanent homes	76.2	211.4	265.0	411.8	429.3	506.5	482.7	465.1	430.6	410.4	410.3	410.2	410.2
Mobile homes	244.6	516.8	811.0	1037.9	892.1	521.3	217.1	120.9	78.3	74.6	74.6	74.6	74.6
Subtotal	320.1	758.2	1076.0	1419.7	1321.4	1027.7	699.8	586.0	508.9	485.0	484.9	484.8	484.7
Retail/Comm / Indus.	20.3	50.3	67.8	103.1	106.3	90.9	68.8	56.0	46.9	44.7	44.5	44.5	44.5
Sites and highways	193.9	502.7	717.8	954.5	863.7	649.2	423.6	342.8	292.5	278.8	278.7	278.7	278.6
Public/Institutional	65.6	167.5	232.1	311.6	288.0	210.7	135.2	112.5	89.9	84.3	84.3	84.3	84.3
Total	570.0	1478.7	2693.6	2818.8	2579.4	1978.5	1327.4	1097.3	938.2	892.8	892.5	892.3	892.1
Alternative 8A													
Permanent homes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile homes	0.0	33.4	79.4	199.1	199.1	143.4	47.2	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	0.0	33.4	79.4	199.1	199.1	143.4	47.2	0.0	0.0	0.0	0.0	0.0	0.0
Retail/Comm / Indus	0.0	3.6	8.8	21.0	21.4	15.1	3.6	0.3	0.0	0.0	0.0	0.0	0.0
Sites and highways	0.0	23.0	54.7	137.2	137.1	98.8	32.5	0.0	0.0	0.0	0.0	0.0	0.0
Public/Institutional	0.0	10.2	24.3	61.0	61.0	43.9	10.6	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	70.1	167.3	418.4	418.7	301.1	93.8	0.3	0.0	0.0	0.0	0.0	0.0

Source: HDR Sciences, 27 Aug 81

C10490

Table 2
1984-1994 Annual Myriad of Water Commodity Taxes by Use Category in Beaver County, Ut.

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
A. Domestic water											
Wells	1,124	1,192	1,192	1,192	1,192	1,192	1,192	1,192	1,192	1,192	1,192
Groundwater	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Surface water	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Reservoirs	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total domestic	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
B. Irrigation water											
Wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Groundwater	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Surface water	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Reservoirs	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total irrigation	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
C. Industrial											
Wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Groundwater	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Surface water	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Reservoirs	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total industrial	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
D. Other											
Wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Groundwater	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Surface water	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total wells	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Reservoirs	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total other	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179
Total	1,124	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179	1,179

CT0538

TABLE 3.2-2. Net Annual MX-Related Land Requirements (Acres) By Use Category In Beaver County, Ut.
 Assuming High Baseline
 (Page 2 of 2)

Alternative / Land Use Category	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 4													
Permanent homes	3.6	8.7	2.0	11.6	40.3	33.4	-1.7	3.6	-5.3	-7.4	-1.2	-0.3	-0.1
Mobile homes	19.0	54.1	62.8	115.9	1.6	-136.0	-71.9	-17.5	-10.5	-1.3	-0.2	-0.1	0.0
Subtotal	22.7	62.7	64.8	127.5	42.0	-102.7	-73.5	-13.8	-15.9	-8.8	-1.5	-0.4	-0.1
Retail/Comm / Indus.	3.5	7.1	7.8	14.6	-3.0	-16.5	-7.2	-0.8	-0.3	0.0	0.0	0.0	0.0
Sts. and hwys	15.2	42.4	44.5	86.3	24.6	-75.0	-51.0	-10.9	-10.7	-5.0	-0.8	-0.2	-0.1
Public/Institutional	6.2	16.9	19.2	36.9	7.6	-38.7	-20.1	-3.9	-3.5	-1.4	-0.2	-0.1	0.0
Total	47.7	129.2	136.2	265.3	71.3	-232.9	-151.9	-29.4	-30.9	-15.5	-2.5	-0.7	-0.2
Alternative 5													
Permanent homes	75.4	136.4	55.8	144.6	30.1	70.8	-17.6	-12.8	-43.9	-28.3	-0.1	-0.1	-0.1
Mobile homes	239.1	331.1	189.7	282.0	-126.4	-388.6	-287.3	-113.2	-46.7	-5.1	0.0	0.0	0.0
Subtotal	314.6	467.5	245.5	426.5	-96.3	-317.8	-304.9	-126.0	-90.6	-33.4	-0.1	-0.1	-0.1
Retail/Comm / Indus.	23.5	29.5	7.5	43.5	3.5	-16.4	-17.8	-15.5	-10.3	-2.9	-0.2	0.0	0.0
Sts. and hwys	209.3	309.9	165.1	273.2	-70.0	-230.6	-210.6	-89.9	-58.5	-19.2	-0.1	-0.1	-0.1
Public/Institutional	73.3	101.4	40.9	98.9	-15.7	-86.0	-67.9	-26.7	-26.0	-7.9	0.0	0.0	0.0
Total	620.7	908.3	459.0	842.2	-178.4	-650.7	-601.2	-258.0	-185.4	-63.4	-0.4	-0.2	-0.2
Alternative 6													
Permanent homes	76.2	135.2	53.6	146.8	17.5	77.2	-23.7	-17.6	-34.5	-20.2	-0.1	-0.1	-0.1
Mobile homes	214.9	331.9	264.2	226.9	-145.8	-370.8	-304.2	-96.2	-42.6	-3.7	0.0	0.0	0.0
Subtotal	291.1	467.1	317.8	373.7	-128.3	-293.6	-327.9	-113.8	-77.1	-23.9	-0.1	-0.1	-0.1
Retail/Comm / Indus.	20.3	30.0	17.5	35.2	3.2	-15.3	-22.1	-12.8	-9.2	-2.2	-0.2	0.0	0.0
Sts. and hwys	193.0	309.7	215.1	236.7	-90.7	-214.6	-225.6	-80.7	-50.3	-13.7	-0.1	-0.1	-0.1
Public/Institutional	65.6	101.9	64.6	79.5	-23.6	-77.4	-75.5	-22.7	-22.5	-5.6	0.0	0.0	0.0
Total	570.0	908.7	615.0	725.2	-239.4	-600.9	-651.1	-230.1	-159.1	-45.5	-0.3	-0.2	-0.2
Alternative 8A													
Permanent homes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile homes	0.0	33.4	46.1	119.7	-0.1	-55.7	-96.2	-47.2	0.0	0.0	0.0	0.0	0.0
Subtotal	0.0	33.4	46.1	119.7	-0.1	-55.7	-96.2	-47.2	0.0	0.0	0.0	0.0	0.0
Retail/Comm / Indus.	0.0	3.6	5.2	12.3	0.4	-6.4	-11.5	-3.2	-0.3	0.0	0.0	0.0	0.0
Sts. and hwys	0.0	23.0	31.7	82.5	0.0	-38.4	-66.3	-32.5	0.0	0.0	0.0	0.0	0.0
Public/Institutional	0.0	10.2	14.1	36.7	0.0	-17.1	-33.3	-10.6	0.0	0.0	0.0	0.0	0.0
Total	0.0	70.1	97.1	251.1	0.3	-117.5	-207.3	-93.5	-0.3	0.0	0.0	0.0	0.0

Source HDR Sciences, 28-AUG-81

CT0538

and D_r = Density factor for multiunit housing = 10 units per acre

$$(10) M^t = U_m^t D_m$$

where U_m^t = Number of mobile homes required in year t

and D_m = Density factor for mobile homes = 5 units per acre

For commercial/business land uses:

$$(11) C^t = R^t + O^t + I^t$$

where R^t = Acres of land required for retail sales uses in year t

O^t = Acres of land required for office-commercial uses in year t

and I^t = Acres of land required for industrial uses in year t

$$(12) R^t = \left[\sum_{i=1}^7 \sum_{j=1}^3 0.31 Y_{i,j}^t E_{i,j} \right]^5 / V_r (43,560)$$

where i = Employment categories from 1 to n = 7

j = Places of residence from 1 to n = 3

Y_{ij}^t = Aggregate gross personal income of the i^{th} employment category in the j^{th} residential location in year t

0.31 = Proportion of income spent on retail goods, constant for all i and j

E_{ij} = Proportion of retail expenditures which are local for the i^{th} employment category in j^{th} residential location (values shown in Table 3.1.2-1)

V_r = Retail sales volume in dollars per square foot of gross leasable building area, constant = \$87/sq ft

5 = Multiple of building area to obtain total square feet required for building and ancillary activities such as parking

and 43,560 conversion factor for acres

$$(13) \quad O_t = \left[\sum_{i=1}^7 \sum_{j=1}^3 0.2 Y_{i,j}^t F_{i,j} \right] \frac{V_O}{43,560} \quad (3.5)$$

where F_{ij} = Proportion of commercial services expenditures which are local for the i^{th} employment category in the j^{th} residential location (values shown in Table 3.1.2-1)

0.2 = Proportion of income spent on commercial services, constant for all i and j

3.5 = Constant which is multiple of building area used to obtain total land required for building and ancillary activities such as parking

and V_O = Commercial sales volume per square foot of building area = \$60/sq ft

$$(14) \quad I^t = \frac{0.2 E_C^t}{43,560} 1.2 (B + P)$$

where E_C^t = Total indirect employment in communities in year t

0.2 = Proportion of employment which is in industrial categories

B = Constant which equals building area per employee

P = Constant which equals parking area per employee

1.2 = Factor for ancillary exterior area such as landscaping

For streets and highways:

$$(15) \quad S^t = 1.76 \sum_{h=1}^n \frac{U_h^t (A_h) (100)}{43,560} + 1.1 \sum_{h=1}^n \frac{U_h^t (C_h) (60)}{43,560} + 1.1 \sum_{h=1}^n \frac{U_h^t (M_h) (50)}{43,560}$$

where U_h^t = Number of required units of housing type h

A_h = Number of linear feet of arterial streets required per unit of housing type h (shown in Table 3.1.5-1)

100 = Width of arterial right-of-way in feet

1.76 = Factor to allow for nonresidential requirements for arterial streets

43,560 = Conversion factor, sq ft to acres

C_h = Number of linear feet of collector streets required per unit of housing type h (shown in Table 3.1.5-1)

- 1.1 = Factor to allow for nonresidential requirements for collector streets and for minor streets
 60 = Width of collector street right-of-way in feet
 M_h = Number of linear feet of minor streets required per unit of housing type h (shown in Table 3.1.5-1)
 n = 3
 50 = Width of minor street right-of-way in feet

For public and institutional land uses:

- (16) G^t = $0.04(E^t) + 0.0063(P_C^t) + 0.000015(P_C^t)$
 where E^t = M-X-related school enrollments in year t
 0.04 = Number of acres required per pupil for school sites
 P_C^t = M-X-related in-migrant population resident in communities in year t
 0.0063 = Number of acres required per person for community park land
 0.000015 = Number of acres required per person per year for sanitary landfill sites

4.0 COMMUNITY FACILITIES AND SERVICES MODEL GROUP

4.1 MODEL STRUCTURE AND DESCRIPTION

This model group projects baseline and M-X-related facility and personnel requirements for five different types of community services: public schools, parks and recreation, public safety, health care, and solid waste disposal. These requirements are primarily determined as a function of population size and place of residence, with seven different categories of M-X-related population and three different types of residential locations differentiated in the models. The population in each employment-residential location category is multiplied by per capita factors which express standards for delivery of the various services. The requirements calculated by this method should be interpreted as referring only to the "demand" or need for service inputs, not as forecasts of how the supply of these service inputs would actually respond to M-X-generated demand for the services. The models, therefore, do not forecast changes in the supply of the services nor changes in the quality and attributes of service outputs (or outcomes). Changes in the supply of services are primarily a function of local policy and budgetary considerations and, in many instances, the locational decisions of individual service providers such as physicians. These types of factors are not subject to prediction with any degree of confidence and are beyond the scope of the models discussed in the following sections.

As a practical matter, it is anticipated that the supply of services would ultimately increase to accommodate the projected long-term demand levels; shortfalls are likely to occur during the construction period when the maximum level of population in-migration is reached. This is likely to be especially the case for health services and parks and recreation facilities. Other services such as education and public safety would be more amenable to temporary expansion in short-term facilities (mobile classrooms and offices) staffed by short-term employees. Only when long-term population growth is projected, as in communities within commuting distance of operating bases, is construction of new permanent facilities anticipated.

EDUCATION SERVICES (4.1.1)

The education services submodel provides baseline and M-X-related forecasts of the number of pupils in three grade categories, teacher requirements in the three grade categories, the number of new classrooms and school facilities for each grade category, and school construction costs excluding land.

The number of school pupils (kindergarten through senior high school) is estimated separately for a) community-located population, and b) base-located population. This is accomplished in two steps. First, using the number of households in each employment category, the average number of dependents under 20 years of age is derived for each household category. The number of dependents under age 20 per household varies by employment category as follows: 1.60 for construction workers, 1.60 for assembly and checkout personnel, 1.40 for military operations family households, and 0.8 for both civilian operations and indirect worker households. Second, only 65 percent of the dependents would be of school age--i.e., age 5-17 years, assuming an equal distribution of dependents by age cohort. The subtotals are summed to obtain the total number of pupils generated both on and

offbase. The total number of pupils is further subdivided into grade categories--as indicated in Table 4.1.1-1.

The number of teachers required to meet the increased enrollment is calculated by applying appropriate pupil/teacher ratios to the three respective grade categories (see Table 4.1.1-1). Although actual student-teacher ratios vary from one school district to another, the ratio for estimating demand is assumed to be invariant and applies to both rural and urban school districts. The number of new schools required is estimated utilizing a parameter defined as the average number of pupils per school at each grade category. The average school sizes assumed are 350, 500, and 700, respectively for elementary, junior high, and high schools (see Table 4.1.1-1). Although these characteristics of an education services delivery system are quite different from those presently existing in many of the rural, sparsely-populated counties, it is anticipated that the growth induced by the M-X project would transform the nature of their school systems so that they more closely resemble an urban delivery system. School construction costs are projected as a function of enrollments, space requirements per pupil, and costs per square foot of construction. Values for these parameters are assumed at 98 sq ft per pupil and \$45 per square foot (1978 dollars). These costs are converted to 1980 dollars in the model and increased an additional 20 percent to reflect likely changes in the relative prices of construction labor and materials. Except in those places where there is permanent population expansion as a result of the M-X project, additional classrooms are likely to be provided in temporary, mobile facilities.

PUBLIC SAFETY SERVICES (4.1.2)

This sub-model computes projected baseline and M-X-related personnel requirements and facility construction costs for offbase law enforcement and fire protection. Demand for community law enforcement services, and therefore personnel requirements, is assumed to be generated by the total population, whether resident in local communities, the operating base, or in construction camps. The requirements are further assumed to be invariant for all population categories, with a parameter value of 2.0 police officers per thousand population. Although the "boontown" literature suggests that the marginal demand generated by in-migrants for law enforcement services may be higher than the average for the indigenous population, this effect is offset by including the onbase population in estimating demand for community law enforcement services. Base residents may themselves commit or be the victim of offences in local communities. Onbase law enforcement services, however, would be provided by the Air Force. Construction costs for additional community law enforcement facilities such as police stations and detention centers are also assumed to be a function of in-migrant population, with an estimated annual cost of \$48 per person in 1978 dollars (Murphy/Williams, 1978).

The additional personnel needs associated with fire safety services are estimated in a manner similar to those for law enforcement services except that only the population resident in local communities is used to forecast needs. It is assumed that persons and property on the base will be provided fire protection services by the Air Force while the population in temporary construction camps is provided fire safety services by contractors. The personnel needs ratio is assumed to be invariant for all population groups at 1.65 full-time professional fire personnel per 1,000 population residing in local communities (IMCA, 1979), or the equivalent number of volunteer personnel. Capital costs for facility construction are also a

Table 4.1.1-1. Educational services model parameter values.

	Grade Level		
	K - 6	7 - 9	10 - 12
Percent of total pupils	55	25	20
Student/teacher ratio	25	23	22
Average school size (pupils)	350	500	700

T5847/10-2-81

Sources: HDR Sciences, calculation based on Murphy/Williams, (1978); Office of Community and Natural Resource Planning, (1979); University of Nevada, Reno, (1979); and Architects/Planners Alliance, Inc., (1979).

function of the same population segment and are estimated at \$39 per capita in 1978 dollars (Murphy/Williams, 1978). Capital costs for both law enforcement and fire protection services are converted to 1980 dollars in the model and increased an additional 20 percent to reflect likely changes in the relative prices of construction materials and labor.

COMMUNITY PARKS AND RECREATION SERVICES (4.1.3)

The parks and recreation submodel projects only facility and land requirements, rather than personnel. Needs for three types of urban recreation facilities--playgrounds, neighborhood parks, and community parks--are functions of the size of the population residing in local communities, and exclude the population living on the base or in construction camps. Recreation services and facilities are to be provided onbase by the Air Force, while those transient construction workers not accompanied by families are unlikely to demand the types of services usually obtained at community parks. The requirements per person resident in communities are assumed to be 0.001 acres for playgrounds, 0.0013 acres for neighborhood parks, and 0.004 acres for community parks and open space. These per capita requirements, which are standards developed by the National Park and Recreation Association for urban communities, are likely to result in overestimates of the needs for additional parks in small, rural-oriented communities such as those found in the study areas of Nevada/Utah and Texas/New Mexico. The abundance of developed and undeveloped rural outdoor recreation sites in the regions being examined and apparent preferences by many residents for recreation activities at dispersed sites suggest that demand for community recreation facilities will be less than would be the case in urban communities.

SOLID WASTE DISPOSAL SERVICES (4.1.4)

This submodel projects quantity of solid waste generated, in terms of both weight and volume, and the quantity of land (sanitary landfill) required for solid waste disposal. As in the case of fire protection and park services, only the population projected to reside in communities is presumed to generate demand for this local service; onbase solid waste disposal requirements are assumed to be provided by the Air Force, while contractors would dispose of solid waste generated in construction camps. The per capita solid waste generation rate assumed is 5.0 pounds per day, which creates a requirement of 0.000015 acres per person per year (Architects/Planners Alliance, Inc., 1979).

HEALTH SERVICES (4.1.5)

Demands or needs for additional health services personnel and facilities, including physicians, nurses, dentists, mental health workers, other support personnel, and hospital beds, are projected individually for seven categories of population in three categories of residential locations. The model computes needs for civilian health services only, and excludes those health personnel and facilities that would be provided onbase by the Air Force for military personnel and their dependents and those provided in construction camps for construction workers by contractors.

Air Force personnel and their dependents participate in the Uniformed Services Health Benefits Program (USHBP), which provides both inpatient and

outpatient medical care through Uniformed Services health facilities and personnel on a space-available basis. If space or particular medical and surgical services at the Uniformed Services facility are not available, military personnel and their dependents are authorized to participate in the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) on a cost-sharing basis. Since 1976, Defense Appropriations Acts have prohibited the use of CHAMPUS funds for payment of nonemergency inpatient care at civilian facilities if services are available at a Uniformed Services Medical Treatment Facility within a 40 mi radius of the patient's residence. If the needed care cannot be provided at the Uniformed Services Hospital, the hospital issues a nonavailability statement to the patient. This statement is required for payment of all claims by CHAMPUS beneficiaries for nonemergency inpatient care at civilian facilities. Participation by civilian health care provided in the CHAMPUS program is entirely voluntary.

Since the proposed and alternative operating base sites are generally located in sparsely populated rural areas which traditionally have an insufficient supply of health care providers, the model assumes that a comprehensive program of health services would be provided onbase. Except for routine dental services, which are not covered by USHBP or CHAMPUS for dependents of military personnel, the onbase military population is assumed to generate no demand for civilian health services. Military personnel and their dependents residing off-base, however, are assumed to generate a demand for civilian health services at one fifth the rate of the indirect and baseline populations. This demand factor would include allowances for treatment of emergencies, for residency of some personnel beyond the 40 mi limit, and the possibility that space or certain services may not be available at all times onbase through the Uniformed Services Facility.

Base and shelter construction and assembly and checkout population categories are assumed by the model to generate the same level of demand for health services; differences in the per capita quantity of demand for these four categories are associated with place of residence. When they reside in local communities, the population in these categories have the same per capita demand ratios as the indirect and baseline populations, although this may overstate demand since these groups would be temporary residents. On the other hand, when people are resident in construction camps the model utilizes demand ratios for these population categories which are two thirds that of the indirect population. The lower demand at this location reflects the composition of the construction camp population, which consists of members of the workforce unaccompanied by dependents. The age and sex composition of this population suggests a lower level of utilization as well as needs for a smaller range of types of health services than would be characteristic of a typical population. In addition, routine nonemergency outpatient services may be provided in construction camps by contractors, further reducing the scope of civilian health services required by the construction camp population.

In summary, the model projects the highest per capita demand to be associated with civilian operations, indirect, and that portion of the construction and assembly and checkout population which is resident in communities, while lower levels of demand are associated with military households and with residency onbase or in construction camps. Standards or demand ratios for the various components of health services, expressed as requirements or needs per 1,000 residents, are shown in Table 4.1.5-1 for each category of population and place of residence.

Table 4.1.5-1. Health services personnel and hospital bed requirements assumed per 1,000 persons, by population and place of residence categories.

Health Services Requirements	Population and Residence Categories				Civilian/Indirect Community
	Military Population	Community	OB	OB/Cluster Construction and A & CO	
Physicians	0.30	0.00		1.50	1.00
Dentists	0.32	0.32		0.53	0.53
Nurses	0.90	0.00		4.51	3.00
Mental health personnel	0.25	0.00		0.50	0.50
Other support personnel	0.50	0.00		2.50	2.50
Hospital beds	0.80	0.00		4.00	2.67
T5846/9-27-81					

Sources: HDR Sciences, based on Murphy/Williams Urban Planning and Housing consultants, 1978; Office of Community and Natural Resource Planning, Six County Commissioners Organization for the Four Corners Regional Commission, 1979; Bureau of Business and Economic Research, University of Nevada, Reno, 1979; and Architects/Planners Alliance, Inc., 1979.

It should be emphasized that the model projects only the demand or needs for health services rather than likely changes in their supply. The general pattern of demand in the deployment region's communities would be one of rapid, large-scale increases followed by substantial declines upon completion of construction. With the historical difficulty in attracting physicians and other health providers to small isolated communities, the fluctuating demand for health services, and the capital-intensive facilities required in a health services delivery system, it is likely that shortfalls may occur during the period of the maximum population impact.

4.2 EXAMPLE COMMUNITY SERVICES AND FACILITIES MODEL OUTPUTS AND COMPUTATIONAL PROCEDURES

Illustrative community services and facilities model summary outputs are presented in Tables 4.2-1 through 4.2-6, which show M-X-related additional school enrollments, teacher requirements, health facilities and personnel requirements, requirements for additional law enforcement and fire safety personnel, and land requirements for parks and recreation. Unsummarized model outputs for the Proposed Action in Beaver County, Utah, with more detail by employment category and place of residence, are shown in Appendix A, Table A-1. The following sections describe each summary output table in terms of how it should be interpreted and the equations for computing values for the variables.

SCHOOL ENROLLMENTS (TABLE 4.2-1)

The school age population projected to be generated by the project that would be present in the county (or region) is shown by grade category for Beaver County, Utah each year from 1982 through 1994. In addition, the table indicates the projected total baseline school-age population and the percentage difference represented by the M-X-related enrollments. The data are shown separately for each alternative that might affect a particular county. School enrollments are computed separately for the base, where applicable, and the community, with total county enrollments the sum of the two places. More detailed data are shown in Appendix Table A-1, including enrollments by employment category and place of residence.

Computational Equations

$$(17) \quad E_T^t = E_C^t + E_b^t$$

where E_T^t = Total in-migrant school-age population in year t

E_C^t = In-migrant school-age population resident in communities in year t

and E_b^t = In-migrant school-age population resident onbase in year t

$$(18) \quad E_C^t = E_{kc}^t + E_{jc}^t + E_{hc}^t$$

where E_{kc}^t = Kindergarten through grade 6 enrollments in year t

Table 4.2-1.
Projected M-X-Related School Enrollments By Grade Level In Beaver County, Ut
Assuming High Baseline (Page 1 of 2)

Alternative / Grade Level	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline Enrollments	1411	1906	2161	2418	2636	2205	2137	2159	2192	2229	2264	2300	2325
Proposed Action													
K-6	26	127	440	1346	1713	1864	1932	1864	1649	1582	1581	1581	1581
7-9	12	58	200	612	777	847	887	750	719	719	719	719	719
10-12	10	46	160	489	623	678	710	678	600	575	575	575	575
Total M-X related	48	231	800	2447	3114	3389	3548	3389	2998	2875	2875	2875	2875
M-X plus baseline	1489	2137	2964	4865	5750	5594	5686	5548	5190	5104	5175	5175	5200
Percent difference From baseline	52	3	12.1	37.0	101.2	118.1	193.7	166.0	157.0	136.8	129.0	125.0	123.7
Alternative 1													
K-6	26	127	288	594	621	264	132	116	110	108	108	108	108
7-9	12	58	131	270	282	120	60	53	50	49	49	49	49
10-12	10	46	105	216	226	96	48	42	40	39	39	39	39
Total M-X related	48	231	324	1080	1127	480	239	210	200	197	197	196	196
M-X plus baseline	1489	2137	2688	3498	3765	2685	2377	2369	2392	2426	2461	2496	2520
Percent difference From baseline	52	3	12.1	24.2	44.6	42.1	21.8	11.2	9.7	9.1	8.8	8.7	8.4
Alternative 2													
K-6	26	127	288	593	576	184	22	8	8	0	0	0	0
7-9	12	58	131	270	271	83	10	4	4	4	4	4	4
10-12	10	46	105	216	217	67	8	3	3	3	3	3	3
Total M-X related	48	231	324	1079	1084	334	41	15	15	15	15	15	15
M-X plus baseline	1489	2137	2688	3497	3720	2539	2178	2174	2207	2244	2279	2313	2339
Percent difference From baseline	52	3	12.1	24.2	44.6	41.1	15.1	1.9	0.7	0.7	0.7	0.6	0.6
Alternative 3													
K-6	124	264	219	724	813	378	273	217	174	160	159	150	158
7-9	57	120	100	329	371	172	125	97	79	73	72	72	72
10-12	45	96	80	263	276	137	100	79	63	58	58	58	58
Total M-X related	226	481	378	1316	1482	687	499	395	317	292	288	288	288
M-X plus baseline	1667	2386	2362	3734	4119	7872	2636	2594	2507	2520	2552	2580	2612
Percent difference From baseline	52	15.7	25.2	18.4	51.4	56.7	31.1	23.4	18.3	14.5	13.1	12.7	12.5

Source HDR Sciences, 5-OCT-81

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Table 4.2-1.

Projected M-X-Related School Enrollments By Grade Level In Beaver County, Ut.
Assuming High Baseline
(Page 2 of 2)

Alternative / Grade Level	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 4													
K-6	54	200	369	693	756	401	229	177	171	160	159	158	158
7-9	25	91	169	316	344	182	104	90	78	73	72	72	72
10-12	20	73	134	253	275	146	83	72	62	58	58	58	58
Total M-X related	98	364	671	1264	1379	730	417	361	310	291	288	288	288
M-X plus baseline	1539	2270	2835	3682	4011	2935	2554	2520	2503	2520	2552	2588	2612
Percent difference													
From baseline	6.8	17.1	31.0	52.2	52.1	33.1	19.5	16.7	14.1	13.1	12.7	12.5	12.4
Alternative 5													
K-6	607	1433	1794	3047	3577	3251	2707	2508	2276	2206	2206	2206	2206
7-9	276	691	797	1385	1626	1478	1231	1140	1035	1003	1003	1003	1003
10-12	221	521	638	1108	1301	1182	985	912	828	802	802	802	802
Total M-X related	1103	2606	3190	5541	6503	5911	4922	4595	4139	4011	4011	4011	4011
M-X plus baseline	2544	4912	5334	7957	9139	8116	7062	6718	6331	6240	6275	6311	6335
Percent difference													
From baseline	76.6	136.7	147.4	229.1	246.7	268.1	230.4	211.2	188.8	180.0	177.2	174.4	172.3
Alternative 6													
K-6	937	1369	1905	3019	3480	3235	2623	2457	2236	2206	2206	2206	2206
7-9	244	622	866	1372	1582	1470	1192	1117	1026	1003	1003	1003	1003
10-12	195	498	693	1098	1266	1176	954	893	820	802	802	802	802
Total M-X related	976	2490	3463	5488	6328	5881	4767	4467	4102	4011	4011	4011	4011
M-X plus baseline	2417	4395	5627	7907	8964	8086	6907	6626	6295	6240	6275	6311	6335
Percent difference													
From baseline	67.8	130.6	160.0	226.9	240.0	266.7	223.2	206.9	187.1	180.0	177.2	174.4	172.3
Alternative 8A													
K-6	0	91	216	542	391	86	0	0	0	0	0	0	0
7-9	0	41	98	247	178	39	0	0	0	0	0	0	0
10-12	0	33	79	197	142	31	0	0	0	0	0	0	0
Total M-X related	0	165	373	986	710	156	0	0	0	0	0	0	0
M-X plus baseline	1441	2071	2537	3405	3622	2919	2293	2159	2192	2229	2264	2300	2325
Percent difference													
From baseline	0.0	8.7	18.2	40.8	37.4	32.2	7.3	0.0	0.0	0.0	0.0	0.0	0.0

Source: HDR Sciences, 5-OCT-81

C1

E_{jc}^t = Junior high school enrollments in year t
 and E_{hc}^t = High school enrollments in year t

$$(19) \quad E_c^t = .55 \left[\sum_{i=1}^n H_{ic}^t (A_i - 2) (.65) \right] + .25 \left[\sum_{i=1}^n H_{ic}^t (A_i - 2) (.65) \right] \\ + .20 \left[\sum_{i=1}^n H_{ic}^t (A_i - 2) (.65) \right]$$

where i = Employment/population categories and n = 7
 H_{ic}^t = Number of households in population category i resident in communities in year t
 A_i = Average household size for population category i
 2 = Number of adults over age 20 per family household
 0.65 = Proportion of population under age 20 between the ages of 5 and 18
 0.55 = Proportion of school-age population in grades K-6
 0.25 = Proportion of school-age population in grades 7-9
 0.20 = Proportion of school-age population in grades 10-12
 $(20) \quad E_b^t = 0.5 \left[H_{mb}^t (A_m - 2) (0.65) \right] + .25 \left[H_{mb}^t (A_m - 2) (0.65) \right] + .25 \left[H_{mb}^t (A_m - 2) (0.65) \right]$
 where H_{mb}^t = Number of military households resident onbase in year t
 A_m = Average family household size for military households = 3.4 and other factors are as in equation 19

TEACHER REQUIREMENTS (TABLE 4.2-2)

The table indicates, by grade category, the number of teachers that would be necessary to accommodate the M-X-related enrollments present in the county if the standards for pupil-teacher ratios, discussed in Section 4.1.1, are maintained. The table also shows the number of teachers required for the baseline school-age population and the percent change over the baseline represented by M-X-related requirements. The data should be interpreted as estimates of needs for additional teachers, not as forecasts of how the supply of teachers would respond to M-X-induced demand.

Table 1.2. Projected MX-Related Teacher Requirements By Grade Level In Beaver County, Ut.
Assuming No Change in Baseline
Age 1 of 2)

Alternative	Grade Level	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Baseline Requirements		65	87	98	110	120	100	97	98	100	101	103	105	106
Proposed Action:		1	5	18	54	69	75	78	75	66	63	63	63	63
K-6	1	1	3	9	27	34	37	39	37	33	31	31	31	31
7-9	1	1	2	7	22	28	31	32	31	27	26	26	26	26
10-12	0	0	10	34	103	131	142	149	142	126	121	121	121	121
Total M-X related	2	2	10	96	132	213	251	242	246	240	225	222	225	226
MX plus baseline	67	67	96	132	213	251	242	246	240	225	222	225	225	226
Percent difference		3.1	11.2	34.1	93.4	109.0	141.9	153.3	144.9	126.2	119.1	117.2	115.4	114.2
From baseline														
Alternative 1														
K-6	1	5	12	24	25	11	5	5	4	4	4	4	4	4
7-9	1	3	6	12	12	5	3	2	2	2	2	2	2	2
10-12	0	2	5	10	10	4	2	2	2	2	2	2	2	2
Total M-X related	2	10	22	45	47	20	10	9	8	8	8	8	8	8
MX plus baseline	67	96	120	155	167	120	107	107	108	110	111	113	113	114
Percent difference		3.1	11.2	22.4	41.2	39.5	20.1	10.3	9.0	8.4	8.2	8.0	7.9	7.8
From baseline														
Alternative 2														
K-6	1	5	12	24	24	7	1	0	0	0	0	0	0	0
7-9	1	3	6	12	12	4	0	0	0	0	0	0	0	0
10-12	0	2	5	10	10	3	0	0	0	0	0	0	0	0
Total M-X related	2	10	22	45	45	14	2	1	1	1	1	1	1	1
MX plus baseline	67	96	120	155	165	114	99	99	100	102	104	105	105	106
Percent difference		3.1	11.2	22.4	41.2	38.0	14.0	1.8	0.7	0.6	0.6	0.6	0.6	0.6
From baseline														
Alternative 3														
K-6	5	11	9	29	33	15	11	9	7	6	6	6	6	6
7-9	2	5	4	14	16	7	5	4	3	3	3	3	3	3
10-12	2	4	4	12	13	6	5	4	3	3	3	3	3	3
Total M-X related	9	20	17	55	62	29	21	17	13	12	12	12	12	12
MX plus baseline	75	107	115	165	182	129	118	115	113	114	115	117	117	118
Percent difference		14.5	23.3	17.0	50.2	51.9	28.7	21.6	16.9	13.4	12.1	11.8	11.5	11.4
From baseline														

Source: HDR Sciences, 28-AUG-81

CT0394

TABLE 4.2-2. Projected MX Related Teacher Requirements By Grade Level In Beaver County, Ut
 Assuming High Baseline
 (Page 2 of 2)

Alternative / Grade Level	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative 4													
K-6	2.	8.	15.	28.	30.	16.	9.	8.	7.	6.	6.	6.	6.
7-9	1.	4.	7.	14.	15.	8.	5.	4.	3.	3.	3.	3.	3.
10-12	1.	3.	6.	11.	12.	7.	4.	3.	3.	3.	3.	3.	3.
Total M-X related	4.	15.	28.	53.	58.	31.	17.	15.	13.	12.	12.	12.	12.
M-X plus baseline	70.	102.	127.	163.	178.	131.	115.	113.	113.	114.	117.	117.	118.
Percent difference													
From baseline													
Alternative 5													
K-6	24.	57.	70.	122.	143.	130.	108.	100.	91.	88.	88.	88.	88.
7-9	12.	28.	35.	60.	71.	64.	54.	50.	45.	44.	44.	44.	44.
10-12	10.	24.	29.	50.	59.	54.	45.	41.	38.	36.	36.	36.	36.
Total M-X related	46.	109.	134.	232.	273.	248.	207.	191.	174.	168.	168.	168.	168.
M-X plus baseline	112.	196.	232.	342.	393.	348.	304.	289.	273.	270.	271.	273.	274.
Percent difference													
From baseline													
Alternative 6													
K-6	21.	55.	76.	121.	139.	129.	105.	98.	90.	88.	88.	88.	88.
7-9	11.	27.	38.	60.	69.	64.	52.	49.	45.	44.	44.	44.	44.
10-12	9.	23.	31.	50.	58.	53.	43.	41.	37.	36.	36.	36.	36.
Total M-X related	41.	104.	145.	230.	266.	247.	200.	187.	172.	168.	168.	168.	168.
M-X plus baseline	106.	191.	244.	340.	385.	347.	297.	286.	272.	270.	271.	273.	274.
Percent difference													
From baseline													
Alternative 8A													
K-6	0.	4.	9.	22.	22.	16.	3.	0.	0.	0.	0.	0.	0.
7-9	0.	2.	4.	11.	11.	8.	2.	0.	0.	0.	0.	0.	0.
10-12	0.	2.	4.	9.	9.	6.	1.	0.	0.	0.	0.	0.	0.
Total M-X related	0.	7.	17.	41.	41.	30.	7.	0.	0.	0.	0.	0.	0.
M-X plus baseline	65.	94.	115.	151.	161.	130.	104.	98.	100.	101.	103.	105.	106.
Percent difference													
From baseline													

Sources: MDR Sciences, 28-AUG-81

C10394

Computation Equation

$$(21) \quad T_s^t = \frac{E_{kc}^t + E_{kb}^t}{25} + \frac{E_{jc}^t + E_{jb}^t}{23} + \frac{E_{hc}^t + E_{hb}^t}{22}$$

where T_s^t = Total requirements for additional teachers in year t
 E_{kc}^t = Number of pupils in grades K-6 present in communities in year t
 E_{kb}^t = Number of pupils in grades K-6 resident onbase in year t
25 = Pupil-teacher ratio for grades K-6
 E_{jc}^t = Number of pupils in grades 7-9 present in communities in year t
 E_{jb}^t = Number of pupils in grades 7-9 resident onbase in year t
23 = Pupil-teacher ratio for grades 7-9
 E_{hc}^t = Number of pupils in grades 10-12 present in communities in year t
 E_{hb}^t = Number of pupils in grades 10-12 resident onbase in year t
22 = Pupil-teacher ratio for grades 10-12

HEALTH SERVICES PERSONNEL AND HOSPITAL BED REQUIREMENTS (TABLE 4.2-3)

The table presents the number of physicians, registered nurses, dentists, mental health personnel, and hospital beds needed to provide health services to the baseline population and to the in-migrant population generated by the M-X project in the county. The data, which are presented separately for each alternative, should be interpreted as demand or need for the time or services of additional personnel and facilities, not as predictions of how supply would respond to needs. Needs for additional health services during the peak construction period would greatly exceed the long-term or permanent requirements in most counties. Unless specific measures are undertaken to recruit specialized health services personnel, it is likely that supply would not exceed the long-term requirements. Shortfalls during the peak period may lead to deterioration in the quality of services, time delays in obtaining services, or may necessitate travel outside the local area to obtain health services.

Computation Equations

For Physicians

$$(22) \quad D^t = \sum_{i=1}^7 \sum_{P=1}^3 p_{ir}^t s_{ird}$$

TABLE 1.2-3. PROJECTED BASELINE AND M-X RELATED HEALTH SERVICES AND HOSPITAL BED REQUIREMENTS IN BEAVER COUNTY, UT.
ASSUMING HIGH BASELINE
(PAGE 1 OF 2)

ALTERNATIVE / REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASELINE													
PHYSICIANS	10	13	15	16	18	15	15	15	15	15	15	16	16
REGISTERED NURSES	29	39	44	49	54	45	44	45	46	47	46	47	48
DENTISTS	3	5	5	6	6	5	5	5	5	5	5	6	6
MENTAL HEALTH PERS.	2	2	3	3	3	3	3	3	3	3	3	3	3
HOSPITAL BEDS	26	35	39	44	48	40	39	39	40	41	41	42	42
PROPOSED ACTION													
PHYSICIANS	0	1	5	17	22	19	13	8	5	4	4	4	4
REGISTERED NURSES	1	3	13	41	55	52	38	25	15	11	11	11	11
DENTISTS	0	1	2	6	8	7	6	5	5	4	4	4	4
MENTAL HEALTH PERS.	0	1	2	6	8	7	5	3	2	2	2	2	2
HOSPITAL BEDS	1	4	14	45	58	51	35	22	13	10	10	10	10
ALTERNATIVE 1													
PHYSICIANS	0	1	3	7	14	15	7	3	1	1	1	1	1
REGISTERED NURSES	1	3	7	14	21	3	1	0	0	2	2	2	2
DENTISTS	0	1	1	2	2	1	0	0	0	0	0	0	0
MENTAL HEALTH PERS.	0	1	1	2	2	1	0	0	0	0	0	0	0
HOSPITAL BEDS	1	4	8	17	18	7	3	2	1	1	1	1	1
ALTERNATIVE 2													
PHYSICIANS	0	1	3	7	14	14	4	1	0	0	0	0	0
REGISTERED NURSES	1	3	7	14	21	2	1	0	0	0	0	0	0
DENTISTS	0	1	1	2	2	2	1	0	0	0	0	0	0
MENTAL HEALTH PERS.	0	1	1	2	2	1	0	0	0	0	0	0	0
HOSPITAL BEDS	1	4	8	17	17	5	1	0	0	0	0	0	0
ALTERNATIVE 3													
PHYSICIANS	1	3	2	8	8	4	2	2	1	1	1	1	1
REGISTERED NURSES	3	7	6	17	19	9	6	4	3	3	2	2	2
DENTISTS	1	1	1	3	3	3	1	1	1	0	0	0	0
MENTAL HEALTH PERS.	0	1	1	3	3	3	1	1	0	0	0	0	0
HOSPITAL BEDS	4	8	7	20	23	9	6	4	3	2	2	2	2
ALTERNATIVE 4													
PHYSICIANS	1	2	4	7	8	4	2	1	1	1	1	1	1
REGISTERED NURSES	1	5	9	16	18	9	5	4	3	3	2	2	2
DENTISTS	0	1	1	3	3	2	1	1	1	0	0	0	0
MENTAL HEALTH PERS.	0	1	1	3	3	1	1	1	0	0	0	0	0
HOSPITAL BEDS	2	6	11	20	21	10	5	4	3	2	2	2	2

SOURCE: HDR SCIENCES, 18-AUG-81

CTO682

TABLE 4.2-3. PROJECTED BASELINE AND M-X RELATED HEALTH SERVICES AND HOSPITAL BED REQUIREMENTS IN BEAVER COUNTY, UT
 ASSUMING HIGH BASELINE
 (PAGE 2 OF 2)

ALTERNATIVE / REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
ALTERNATIVE 5													
PHYSICIANS	8	19	23	32	29	19	11	8	5	5	5	5	5
REGISTERED NURSES	20	48	62	84	74	50	30	22	16	14	14	14	14
DENTISTS	3	7	9	13	14	11	9	8	6	6	6	6	6
MENTAL HEALTH PERS.	3	7	8	11	10	7	4	3	2	2	2	2	2
HOSPITAL BEDS	21	50	62	86	76	49	30	22	15	12	12	12	12
ALTERNATIVE 6													
PHYSICIANS	7	18	25	32	27	18	10	8	5	5	5	5	5
REGISTERED NURSES	18	47	66	84	72	49	28	21	15	14	14	14	14
DENTISTS	3	7	9	13	13	11	8	7	6	6	6	6	6
MENTAL HEALTH PERS.	2	6	9	11	10	7	4	3	2	2	2	2	2
HOSPITAL BEDS	19	48	67	85	73	49	27	20	14	12	12	12	12
ALTERNATIVE 8A													
PHYSICIANS	0	1	2	6	6	4	1	0	0	0	0	0	0
REGISTERED NURSES	0	2	5	13	13	9	3	0	0	0	0	0	0
DENTISTS	0	0	1	2	2	0	0	0	0	0	0	0	0
MENTAL HEALTH PERS.	0	0	1	2	2	1	0	0	0	0	0	0	0
HOSPITAL BEDS	0	3	6	16	16	11	3	0	0	0	0	0	0

SOURCE: HDR SCIENCES, 18-AUG-81

CTO682

where D^t = Number of physicians needed in year t
 P_{ir}^t = In-migrant population in category i resident in category r place of residence in year t
and S_{ird} = Standards for physician-population ratio for population category i located at residence category r (shown in Table 4.1.5-1)

For Registered Nurses:

$$(23) \quad N^t = \sum_{i=1}^7 \sum_{r=1}^3 P_{ir}^t S_{irn}$$

where N^t = Number of nurses needed in year t
 S_{irn} = Standards for nurse-population ratio for population category i located in place of residence category r (shown in Table 4.1.5-1)

For Mental Health:

$$(24) \quad M^t = \sum_{i=1}^7 \sum_{r=1}^3 P_{ir}^t S_{irm}$$

where M^t = Number of mental health personnel needed in year t
 S_{irm} = Standard for mental health personnel-population ratio for population category i located at place of residence category r (Table 4.1.5-1)

For Dentists:

$$(25) \quad O^t = \sum_{i=1}^7 \sum_{r=1}^3 P_{ir}^t S_{iro}$$

where O^t = Number of dentists needed in year t
 S_{iro} = Standard for dentist-population ratio for population category i located at place of residence category r (Table 4.1.5-1)

For Hospital Beds:

$$(26) \quad B^t = \sum_{i=1}^7 \sum_{r=1}^3 P_{ir}^t S_{irb}$$

where B^t = Number of hospital beds needed in year t
 S_{irb} = Standard for hospital bed-population ratio for population category i located at place of residence category r (Table 4.1.5-1)

LAW ENFORCEMENT PERSONNEL REQUIREMENTS (TABLE 4.2-4)

The table presents estimates of the additional numbers of law enforcement personnel needed to provide services to the M-X-related in-migrant population, personnel requirements to provide services to the baseline population, and the percent change over the baseline represented by the M-X demand. The data, which are presented separately for each alternative affecting a county, should be interpreted as demands or needs for additional police personnel rather than as projections of how supply would respond to needs.

Computation Equation

$$(27) \quad L_T^t = P_c^t S_e + P_b^t S_e + P_d^t S_e$$

where L_T^t = Total number of law enforcement personnel needed in year t
 P_c^t = M-X-related in-migrant population present in communities in year t
 S_e = Standard for law enforcement personnel-population ratio = 2 per 1,000
 P_b^t = M-X-related in-migrant population resident onbase in year t
and P_d^t = M-X-related in-migrant population resident in construction camps in year t

FIRE PROTECTION PERSONNEL REQUIREMENTS (TABLE 4.2-5)

The table presents baseline, M-X-related, and total requirements for fire safety and emergency medical transport personnel and the percent change over the baseline represented by the M-X-generated need for additional firemen. Unlike law enforcement services, only the population resident in communities is assumed to create demands for additional fire protection personnel. The model output should be interpreted as demand for the services of full-time professional fire personnel; if a community utilizes a volunteer fire department system, the output would have to be converted to the equivalent number of volunteer personnel.

TABLE 1.2-1. PROJECTED MX-RELATED REQUIREMENTS FOR LAW ENFORCEMENT PERSONNEL IN BEAVER COUNTY, UT.
ASSUMING HIGH BASELINE
(PAGE 1 OF 2)

ALTERNATIVE / PERSONNEL REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASELINE REQUIREMENTS	13	17	20	22	24	20	19	20	20	20	21	21	21
PROPOSED ACTION													
M-X REQUIREMENTS	C	2	8	24	31	34	34	31	27	25	25	25	25
M-X PLUS BASELINE	14	19	27	46	55	54	53	51	47	46	46	46	46
PERCENT DIFFERENCE FROM BASELINE	3.2	11.6	38.6	107.7	129.0	167.8	174.2	158.8	133.8	124.7	122.7	120.8	119.5
ALTERNATIVE 1													
M-X REQUIREMENTS	0	2	5	9	10	4	2	2	2	2	2	2	2
M-X PLUS BASELINE	14	19	24	31	34	24	22	21	22	22	22	22	22
PERCENT DIFFERENCE FROM BASELINE	3.2	11.6	23.1	42.2	41.1	20.9	10.8	9.1	8.4	8.1	7.9	7.8	7.7
ALTERNATIVE 2													
M-X REQUIREMENTS	0	2	5	9	9	3	0	0	0	0	0	0	0
M-X PLUS BASELINE	14	19	24	31	33	23	20	20	20	20	20	20	20
PERCENT DIFFERENCE FROM BASELINE	3.2	11.6	23.1	42.2	39.1	13.6	1.7	0.9	0.9	0.8	0.8	0.8	0.8
ALTERNATIVE 3													
M-X REQUIREMENTS	2	4	3	11	13	6	4	3	3	2	2	2	2
M-X PLUS BASELINE	15	22	23	33	37	26	24	23	23	23	23	23	23
PERCENT DIFFERENCE FROM BASELINE	1.4	8	24.2	17.7	50.8	54.1	30.6	21.5	17.2	13.6	12.1	11.7	11.5
ALTERNATIVE 4													
M-X REQUIREMENTS	1	3	6	11	12	6	4	3	3	2	2	2	2
M-X PLUS BASELINE	14	20	25	33	36	26	23	23	23	23	23	23	23
PERCENT DIFFERENCE FROM BASELINE	6.2	18.1	29.6	49.6	49.9	31.7	18.6	15.8	13.2	12.1	11.7	11.5	11.4

SOURCE: HDR SCIENCES, 18-AUG-81

CT0634

TABLE 4.2-4. PROJECTED MX-RELATED REQUIREMENTS FOR LAW ENFORCEMENT PERSONNEL IN BEAVER COUNTY, UT ASSUMING HIGH BASELINE (PAGE 2 OF 2)

SOURCE : HDR SCIENCES, 18-AUG-81

CT0634

TABLE 4.2-5. PROJECTED MX-RELATED REQUIREMENTS FOR FIRE PROTECTION PERSONNEL IN BEAVER COUNTY, UT.
ASSUMING HIGH BASELINE
(PAGE 1 OF 2)

ALTERNATIVE / PERSONNEL REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASELINE REQUIREMENTS	11.	14.	16.	18.	20.	17.	16.	16.	17.	17.	17.	17.	17.
PROPOSED ACTION													
M-X REQUIREMENTS	0.	1.	5.	16.	22.	21.	16.	12.	8.	7.	7.	7.	7.
M-X PLUS BASELINE	11.	16.	22.	35.	41.	37.	32.	28.	25.	24.	24.	24.	24.
PERCENT DIFFERENCE FROM BASELINE	2.5	9.2	33.0	90.4	109.4	125.7	100.9	73.0	49.4	31.6	41.0	40.3	39.9
ALTERNATIVE 1													
M-X REQUIREMENTS	0.	1.	3.	6.	7.	3.	2.	1.	1.	1.	1.	1.	1.
M-X PLUS BASELINE	11.	16.	19.	21.	26.	20.	18.	18.	18.	18.	18.	19.	19.
PERCENT DIFFERENCE FROM BASELINE	2.5	9.2	18.5	34.0	33.4	19.2	10.8	9.1	8.4	8.1	7.9	7.8	7.7
ALTERNATIVE 2													
M-X REQUIREMENTS	0.	1.	3.	6.	6.	2.	0.	0.	0.	0.	0.	0.	0.
M-X PLUS BASELINE	11.	16.	19.	24.	26.	19.	16.	16.	17.	17.	17.	17.	18.
PERCENT DIFFERENCE FROM BASELINE	2.5	9.2	18.5	34.0	31.3	12.0	1.7	0.9	0.9	0.8	0.8	0.8	0.8
ALTERNATIVE 3													
M-X REQUIREMENTS	1.	3.	3.	8.	9.	5.	3.	3.	2.	2.	2.	2.	2.
M-X PLUS BASELINE	12.	17.	19.	26.	29.	21.	19.	19.	19.	19.	19.	19.	19.
PERCENT DIFFERENCE FROM BASELINE	4	2.5	9.2	18.5	34.0	31.3	12.0	1.7	0.9	0.8	0.8	0.8	0.8
ALTERNATIVE 4													
M-X REQUIREMENTS	1.	2.	4.	8.	5.	3.	3.	2.	2.	2.	2.	2.	2.
M-X PLUS BASELINE	11.	17.	20.	26.	28.	22.	19.	19.	19.	19.	19.	19.	19.
PERCENT DIFFERENCE FROM BASELINE	5.5	15.7	24.9	41.4	42.2	30.0	18.6	15.8	13.2	12.1	11.7	11.5	11.4

SOURCE: HDR SCIENCES, 18-AUG-81

CT0586

TABLE 4.2-5. PROJECTED MX-RELATED REQUIREMENTS FOR FIRE PROTECTION PERSONNEL IN BEAVER COUNTY, UT.
ASSUMING HIGH BASELINE
(PAGE 2 OF 2)

ALTERNATIVE / PERSONNEL REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<hr/>													
ALTERNATIVE 5													
M-X REQUIREMENTS	8.	19.	24.	34.	32.	23.	15.	12.	10.	9.	9.	9.	9.
M-X PLUS BASELINE	18.	33.	40.	52.	51.	39.	31.	28.	26.	26.	26.	26.	27.
PERCENT DIFFERENCE FROM BASELINE													
ALTERNATIVE 6													
M-X REQUIREMENTS	7.	18.	25.	34.	31.	23.	14.	12.	10.	9.	9.	9.	9.
M-X PLUS BASELINE	18.	32.	41.	52.	50.	39.	30.	28.	26.	26.	26.	26.	27.
PERCENT DIFFERENCE FROM BASELINE													
ALTERNATIVE 8A													
M-X REQUIREMENTS	0.	1.	2.	6.	6.	4.	1.	0.	0.	0.	0.	0.	0.
M-X PLUS BASELINE	11.	15.	18.	24.	25.	21.	17.	16.	16.	17.	17.	17.	17.
PERCENT DIFFERENCE FROM BASELINE													

SOURCE: HDR SCIENCES, 18-AUG-81

CT0586

Computation Equation

$$(28) \quad F_c^t = P_c^t S_f$$

where F_c^t = Total number of firemen needed by communities in year t

P_c^t = Total M-X-related in-migrant population resident in communities in year t

and S_f = Standard for firemen-population ratio = 1.65 per 1,000

PARKS AND RECREATION FACILITY REQUIREMENTS (TABLE 4.2-6)

Requirements, or needs, for additional playgrounds, neighborhood parks, and community-wide parks and total acres of park land needed by the M-X-induced in-migrant population, assuming standards developed by the National Recreation and Park Association for urban communities, are shown in the table for each alternative affecting a county or region. Requirements, which are a function of that portion of the population resident in communities, are highest during the M-X construction period but decline thereafter to permanent levels which are considerably lower. It is reasonable to conclude that communities would plan and acquire parkland to accommodate the needs of the long-term rather than the peak population in order to avoid a large surplus of parkland after M-X construction is over.

Computation Equation

$$(29) \quad R_{pc}^t = P_c^t (S_g) + P_c^t (S_n) + P_c^t (S_r)$$

where R_{pc}^t = Total acres of parks needed in communities in year t

P_c^t = Total M-X-related in-migrant population present in communities in year t

S_g = Standard for playground acres-population ratio = 1.0 per 1,000

S_n = Standard for neighborhood park acres-population ratio = 1.3 per 1,000

and S_r = Standard for community-wide park acres-population ratio = 4.0 per 1,000

TABLE 4.2-6. Cumulative MX-Related Land Requirements (Acres) For Parks And Playgrounds In Beaver County, Ut.
Assuming High Baseline
(Page 1 of 2)

Alternative / Land Requirements		1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Proposed Action														
Playgrounds	0.2	0.8	3.3	9.9	13.1	12.6	9.8	7.2	4.9	4.2	4.2	4.2	4.2	4.2
Neighborhood parks	0.2	1.0	4.2	12.9	17.0	16.4	12.7	9.3	6.4	5.5	5.5	5.5	5.5	5.5
Community parks	0.7	3.2	13.0	39.8	52.5	50.4	39.2	28.7	19.7	16.9	16.9	16.9	16.9	16.9
Total	1.0	5.0	20.5	62.6	82.6	79.4	61.7	45.2	31.0	26.6	26.6	26.6	26.6	26.6
Alternative 1														
Playgrounds	0.2	0.8	1.8	3.7	4.0	1.9	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.8
Neighborhood parks	0.2	1.0	2.4	4.9	5.2	2.5	1.4	1.2	1.1	1.1	1.1	1.1	1.1	1.1
Community parks	0.7	3.2	7.3	15.0	16.0	7.7	4.2	3.6	3.3	3.3	3.3	3.3	3.3	3.3
Total	1.0	5.0	11.4	23.5	25.2	12.1	6.6	5.6	5.2	5.1	5.1	5.1	5.1	5.1
Alternative 2														
Playgrounds	0.2	0.8	1.8	3.7	3.8	1.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Neighborhood parks	0.2	1.0	2.4	4.9	4.9	1.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Community parks	0.7	3.2	7.3	14.9	15.0	4.8	0.7	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Total	1.0	5.0	11.4	23.5	23.6	7.6	1.0	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Alternative 3														
Playgrounds	0.8	1.8	1.6	4.7	5.4	2.9	2.1	1.7	1.4	1.2	1.2	1.2	1.2	1.2
Neighborhood parks	1.0	2.3	2.0	6.1	7.0	3.8	2.7	2.2	1.8	1.6	1.6	1.6	1.6	1.6
Community parks	3.1	7.1	6.3	18.7	21.7	11.6	8.4	6.8	5.4	4.9	4.8	4.8	4.8	4.8
Total	4.9	11.1	9.9	29.4	34.1	18.3	13.2	10.6	8.5	7.7	7.7	7.7	7.7	7.7
Alternative 4														
Playgrounds	0.4	1.4	2.5	4.5	5.1	3.0	1.8	1.6	1.3	1.2	1.2	1.2	1.2	1.2
Neighborhood parks	0.5	1.8	3.2	5.9	6.6	3.9	2.4	2.0	1.7	1.6	1.6	1.6	1.6	1.6
Community parks	1.4	5.4	9.8	18.2	20.2	12.0	7.2	6.2	5.3	4.9	4.8	4.8	4.8	4.8
Total	2.3	6.6	15.4	28.6	31.8	19.0	11.4	9.8	8.3	7.7	7.7	7.7	7.7	7.7
Alternative 5														
Playgrounds	4.6	11.3	14.4	20.4	19.1	13.8	9.3	7.4	5.9	5.5	5.5	5.5	5.5	5.5
Neighborhood parks	6.0	14.6	18.8	26.6	24.9	18.0	12.1	9.6	7.7	7.2	7.2	7.2	7.2	7.2
Community parks	18.5	45.0	57.7	81.8	76.6	55.3	37.2	29.6	23.8	22.0	22.0	22.0	22.0	22.0
Total	29.1	70.9	90.9	128.8	120.6	87.1	58.6	46.6	37.5	34.7	34.7	34.7	34.7	34.7
Alternative 6														
Playgrounds	4.2	10.9	15.3	20.3	18.6	13.7	8.8	7.1	5.8	5.5	5.5	5.5	5.5	5.5
Neighborhood parks	5.5	14.1	19.9	26.4	24.1	17.8	11.4	9.2	7.6	7.2	7.2	7.2	7.2	7.2
Community parks	16.8	43.4	61.2	81.3	74.2	54.7	35.0	28.3	23.3	22.0	22.0	22.0	22.0	22.0
Total	26.5	68.4	96.4	128.1	116.9	86.1	55.2	44.6	36.7	34.7	34.7	34.7	34.7	34.7

Source HDR Sciences, 27-AUG-81

CT0778

TABLE 1.2-6. Cumulative MX-Related Land Requirements (Acres) For Parks And Playgrounds In Beaver County, Ut.
Assuming High Baseline
(Page 2 of 2)

Alternative / Land Requirements	1982	1993	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alternative RA													
Playgrounds	0.0	0.6	1.4	3.4	3.4	2.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Neighborhood parks	0.0	0.7	1.8	4.4	4.4	3.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Community parks	0.0	2.3	5.4	13.7	13.7	9.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	3.6	8.6	21.5	21.5	15.5	4.4	0.0	0.0	0.0	0.0	0.0	0.0

Source: HDR Sciences, 27-AUG-81

CT0778

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APPENDICES

The unsummarized model outputs presented in the following tables represent the potential impacts to Beaver County under the Proposed Action. The results are listed by employee type by year during both the short-term construction period and the long-term operations period.

APPENDIX A

(Tables A-1 through A-13)

Population impacts by county of residence by employment category for Beaver County, Utah (1982-1994, inclusive).

Table A-1.

EMPLOYMENT BASE FOR THIS REGION
AS OF FEBRUARY, 1982. MULTILEVEL DATA
FOR THIS REGION
FOR THE AVAILABILITY PERIOD
BASED AT CURRENT OFFICE, THE CLASS CO.,
AND AT MIFORD, THE RYK CO.)

IMPACTS BY CENTER ON ESTIMATES

FORMATION IMPACTS

ESTIMATED EMPLOYMENT TYPE	EMPLOYMENT	CHANGES	EMP.	EMP.
GENERAL CONSTRUCTION	105,	0,	46,	232,
GENERAL CONTRACTOR AND CO.	0,	0,	0,	0,
GENERAL CONSTRUCTION	0,	0,	0,	0,
GENERAL CONTRACTOR AND CO.	0,	0,	0,	0,
CONTRACTORS, MILITARY	0,	0,	0,	0,
CONTRACTORS, GOVERNMENT	0,	0,	0,	0,
GENERAL CONTRACTOR	26,	0,	0,	0,
GENERAL	142,	122,	46,	230,
GENERAL CONTRACTOR FROM STATE	142,	0,	46,	230,

Table A-2.

PROJECT: RELOCATION OF THE ESTATE
ADDRESS: 1000 N. BROAD ST., PHILADELPHIA,
PA.
DATE IN THIS REPORT: 10/10/68
PURPOSE: FULL INFORMATION - INFORMATION (I)
PLACE: 1111 MICHIGAN AVENUE, CHICAGO, IL (CHICAGO CITY)

IMPACT BY COUNTY OF RESIDENCE

FORMATION IMPACTS

FORMER FORMATION TYPE	PRESENT FORMATION	COMMUNITY	BASE	CAMP	TOTAL
SIMILAR CONSTRUCTION ONE FAMILY RESIDENCY AND PO.	435.	891.	0.	214.	1104.
PART TIME OCCUPATION	0.	0.	0.	0.	0.
LONG DISTANCE AND LONG DURATION, MULTIFAMILY	0.	0.	0.	0.	0.
MULTIFORMATION, CUSTODIAL	0.	0.	0.	0.	0.
MULTIFORMATION	117.	0.	0.	0.	0.
TRANS.	572.	891.	0.	214.	1104.
ALL FORMATIONS FROM TRANS. TO NEW	628.	628.	0.	167.	865.

Table 1-3.

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THEATRE STUDY PRACTICE UNIT TESTIMONIALS

TOPICAL ATTENTION IMPACTS

ENTITLED EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	IASF	CAMP	TOTAL
SAILOR CONSTRUCTION	926.	1932.	0.	456.	2380.
SAILOR ASSEMBLERY AND CO.	25.	45.	0.	13.	58.
RAKE CONSTRUCTION	125.	262.	88.	0.	450.
RAKE ASSEMBLY AND CO.	0.	0.	0.	0.	0.
CONFECTIONS MILITARY	0.	0.	0.	0.	0.
CONFECTIONS CIVILIANS	0.	0.	0.	0.	0.
INDUSTRIAL EMPLOYMENT	736.	735.	0.	0.	735.
TOTAL	1912.	2974.	88.	4688.	3530.
ALL IMMIGRATION FROM RUSSIA, YEAR		2083.	88.	255.	2426.

Table A-4.

25-SF-81

LOCATION: IN AREA, YEAR: 1965.
EXISTING BASE IN THIS REGION
MORTIFIED R.I.P.S. AND DEFENSE DEPT.
BASE IN THIS REGION
PROPOSED OPERATION: TUDI FOR CYANIDE MUDDAVATHA (1)
BASE FOR CYANIDE SPRAYING, NO CLASS (0.)
BASE FOR MINING, DT (NEVER CO.)

IMPACTS BY COUNTY OF REFUGEE

FORUMATION IMPACTS

PRINCIPAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELLER CONSTRUCTION	1828.	3852.	0.	903.	4755.
SHELLER ASSEMBLY AND CO.	23.	41.	0.	13.	53.
BASE CONSTRUCTION	1314.	2769.	935.	0.	3703.
BASE ASS. AND CO.	0.	0.	0.	0.	0.
OPERATIONS, MILITARY	26.	13.	53.	0.	67.
OPERATIONS, CIVILIANS	2.	0.	0.	0.	0.
INDIRECT EMPLOYMENT	2175.	2238.	0.	0.	2238.
TOTAL	5367.	8912.	988.	916.	10816.
NFT IMMIGRATION FROM PREV. YEAR		5939.	900.	448.	7286.

Table A-5.

25-CFF 81

REGION: BEAVERTON
OPERATING BASE IN THIS REGION
BUILT BY U.S. MILITARY
BASE IN THIS REGION
PERIOD OF ACTION: FULL PERIOD - NEVADA-Utah (I)
BASE AT COYOTE SPRINGS, NV (CLARK CO.)
BASE AT MINTON, UT (DAKOTA CO.)

IMPACTS BY COUNTY OF RESIDENCE

POPULATION IMPACTS

PRINCIPAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELTER CONSTRUCTION	1178.	2479.	0.	547.	3027.
SHELTER ASSEMBLY AND CO.	728.	1310.	0.	400.	1710.
BASE CONSTRUCTION	1509.	3177.	1073.	0.	4250.
BASE ASS. AND CO.	0.	0.	0.	0.	0.
OFFICERS, MILITARY	164.	84.	335.	0.	419.
OFFICERS, CIVILIANS	48.	105.	0.	0.	105.
INFFECT EMPLOYMENT	3105.	3877.	0.	0.	3877.
TOTAL	6731.	11032.	1408.	947.	13388.
NET IMMIGRATION FROM FKFV, YEAR			2120.	420.	32.

Table A-6.

20-547-81

REGION: READER
OPERATING BASE IN THIS REGION
MILITARY R.T.M.S. MULTIFIERS USED
BASE IN THIS REGION
PROPOSED ACTION: FULL DEFICIENCY - NEVADA/UTAH (1)
BASE I AT COYOTE SPRINGS, NV (IN ARK CO.)
BASE II AT MILFORD, UT (MAYER CO.)

IMPACTS BY COUNTY OF RESIDENCE

POPULATION IMPACTS

PRINCIPAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELTER CONSTRUCTION	145.	304.	0.	0.	304.
SHELTER ASSEMBLY AND CO.	373.	671.	0.	163.	833.
BASE CONSTRUCTION	1329.	2785.	942.	0.	3226.
BASE ASS. AND CO.	35.	63.	25.	0.	88.
OPERATIONS, MILITARY	1511.	774.	3095.	0.	3868.
OPERATIONS, CIVILIANS	200.	531.	0.	0.	531.
INDIRECT EMPLOYMENT	3624.	4726.	0.	0.	4726.
TOTAL	7217.	9852.	4061.	163.	14076.
NET IMMIGRATION FROM PREV. YEAR		-1180.	2653.	-785.	688.

Table A-7.

25 SEP 1961

REGION: BRAUER
YEAR: 1960
OF PRACTICING BASE IN THIS REGION
NORTHWEST R.I.H.S. AND TUTTIERS USED
BASE IN THIS REGION
FOR ONSITE ACTION: FULL PRACTICING MEDICAL TEAM
BASE AT ROYAL SPRINGS, NO. CLARK CO.,
BASE AT MILITARY, HI BRAUER (D.O.)

IMMIGRATION BY COUNTY OF RESIDENCE

EMIGRATION TRAITS

EMIGRANT EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELFER CONSTRUCTION	0.	0.	0.	0.	0.
SHELFER ASSOCIATE AND CO.	53.	95.	0.	0.	95.
BASE CONSTRUCTION	503.	1030.	351.	0.	1381.
BASE ASS. AND CO.	0.	0.	0.	0.	0.
OFFICATIONS, MILITARY	3310.	1695.	6779.	0.	8474.
OFFICATIONS, CIVILIANS	614.	1690.	0.	0.	1690.
INSTRUCT. PRACTICING	3424.	3390.	0.	0.	3390.
TOTAL	7904.	7130.	7130.	0.	17030.
NET IMMIGRATION FROM PREV. YEAR	-1953.	3069.	-163.	954.	

Table A-8.

REGION: BEAVER
OPERATING BASE IN THIS REGION:
MULTIFACED, I.M.S., MULTILEVELS INC.
BASE IN THIS REGION:
PROPOSED ACTION: FULL EMPLOYMENT - NEVADA/UTAH (I)
BASE I AT COYOTE SPRINGS, NV (CLARK CO.)
BASE II AT MULFORD, UT (BEAVER CO.)

75 SEP-81

IMPACTS BY COUNTY OF RESIDENCE

POPULATION IMPACTS

PRINCIPAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELFER CONSTRUCTION	0.	0.	0.	0.	0.
SHELFER ASSEMBLY AND CO.	0.	0.	0.	0.	0.
BASIC CONSTRUCTION	0.	0.	0.	0.	0.
BASE ASS. AND CO.	0.	0.	0.	0.	0.
OPERATIONS, MILITARY	4109.	2104.	8414.	0.	10518.
OPERATIONS, CIVILIANS	776.	2143.	0.	0.	2143.
INDIRECT EMPLOYMENT	2911.	1939.	0.	0.	1939.
TOTAL	7796.	6186.	8414.	0.	14600.
NET IMMIGRATION FROM PREV. YEAR	-1713.	1234.	0.	-429.	

Table A-9.

REGION: DEAVER
DEFINING BASE IN THIS REGION
MILITARY R, I, M, S, MILITARY USFD
BASE IN THIS REGION
PROPOSED ACTION: FULL DEPLOYMENT - NATIONAL GUARD CO.
BASE 1 AT COYOTE SPRINGS, NV (CLARK CO.,)
BASE 2A: MILFORD, UT (BLAVER CO.)

DEAVER R1

IMPACTS BY COUNTY OF RESIDENCE

POPULATION IMPACTS

FUNCTIONAL EMPLOYMENT	TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELTER CONSTRUCTION		0.	0.	0.	0.	0.
SHELTER ASSEMBLY AND CO.		0.	0.	0.	0.	0.
RAKE CONSTRUCTION		0.	0.	0.	0.	0.
RAKE ACTS, AND CO.		0.	0.	0.	0.	0.
OPERATIONS, MILITARY		2109.	8414.	0.	10518.	
OPERATIONS, CIVILIANS		776.	2143.	0.	0.	2143.
INFFECT EMPLOYMENT		2238.	581.	0.	0.	581.
TOTAL		7123.	4827.	8414.	0.	13242.
NET IMMIGRATION FROM PREV. YEAR			1359.	0.	0.	-1359.

Table A-10.

REGION: REFUGEE
OPERATING BASE IN THIS REGION
PROVIDED R.I.M.C. HOSPITALS USED
PAST IN THIS REGION
PROPOSED ACTION: FOR MILITARY - IN CANADA/OTARIO (L.)
BASE IN MT COYOTE SPRINGS, NY (CLARK CO.)
REFUGEE IN AT MILFORD, UT (BLAVER CO.)

25-SFR-81

IMPACTS BY COUNTY OR RESIDENCE

FOOD/UTILIZATION IMPACTS

PRINCIPAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SUPERVISOR CONSTRUCTION SAILOR ASSEMBLY AND CO.	0.	0.	0.	0.	0.
BASE CONSTRUCTION	0.	0.	0.	0.	0.
BASE ASS. AND CO.	0.	0.	0.	0.	0.
DEFINITIONS, MILITARY OPERATIONS, CIVILIANS	4109. 776. 1231.	2104. 2145. 0.	8414. 0.	0.	10518. 2143. 0.
TRANSPORT EMPLOYMENT					
WOMEN	6116.	4746.	8414.	0.	12660.
NET IMMIGRATION FROM PREV. YEAR	581.	0.	0.	-581.	

Table A-11.

REGION: 10 AFM, 10 TUNS REGION
ORIGIN: 10 AFM, 10 TUNS REGION
MATERIALS, EQUIPMENT AND
EQUIPMENT IN THIS REGION
PERIOD OF TIME: FIRST QUARTER OF 1967
DATE: 1 APR 1967
PAGE: 1 OF 10 PAGES
PAGE NUMBER: 10 AFM, 10 TUNS REGION

IMPACT BY SOURCE IN FIGURE 1

FORMATION IMPACTS

IMPROVEMENT IN FORMATION LIFE	ENVIRONMENT	COMMUNITY	INDUSTRY	MANUFACTURERS
OFFICE CONSTRUCTION	0.	0.	0.	0.
OFFICE EQUIPMENT AND CO.	0.	0.	0.	0.
OFFICE CONSTRUCTION	0.	0.	0.	0.
OFFICE EQUIPMENT AND CO.	0.	0.	0.	0.
OFFICES, ASS., AND CO.	0.	0.	0.	0.
OFFICES, MILITARY	4107.	2104.	8414.	10518.
OFFICES, CIVILIAN	726.	2142.	0.	2142.
OFFICES, GOVERNMENT	987.	0.	0.	0.
TOTAL	5867.	4246.	8414.	12660.
NET IMMIGRATION FROM RNU, YEAR	0.	0.	0.	0.

Table A-12.

255-SFF-31

REGIONS: REGIONS
OF FRACTION BASE IN THIS REGION
BENEFITED: E. L. M. S., MILITARY UNITS
BASE IN THIS REGION
PURCHASE IN ACTION: FRACTION
REGION: NEVADA (UTAH (I))
PAGE 1 AT COUNTY SICKING, NV (CLARK CO.)
PAGE II AT MINEOLA, UT (BLAVER CO.)

IMPACTS BY COUNTY OF RESIDENCE

FORMATION IMPACTS

PRINCIPAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELLER CONSTRUCTION	0.	0.	0.	0.	0.
SHELLER ASSOCIATES AND CO.	0.	0.	0.	0.	0.
RAVE CONSTRUCTION	0.	0.	0.	0.	0.
RAVE ASG., AND CO.	0.	0.	0.	0.	0.
OPERATIONS, MILITARY	4109.	2104.	8414.	0.	10518.
OPERATIONS, CIVILIANS	776.	2142.	0.	0.	2142.
INDIRECT EMPLOYMENT	971.	0.	0.	0.	0.
TOTAL	5856.	4745.	8414.	0.	12660.
NET IMMIGRATION FROM PREV. YEAR		0.	0.	0.	0.

Table A-13.

Period: 1st Month
in this Edition: 1974
Period Military Onbase: 80.0
Number P.R.C. Multifliers used
Base in this Edition
Period Deployment: Deployment - MUNICIPALITY
Base at Current Setting, NV (CIAEN CO.)
Base at All Settings, NV (PAFUE CO.)

REFUGES BY COUNTY OF RESIDENCE

FORESHORTENING FACTS

STRUCTURAL EMPLOYMENT TYPE	EMPLOYMENT	COMMUNITY	BASE	CAMP	TOTAL
SHELTER CONSTRUCTION	0.	0.	0.	0.	0.
SHELTER ASSISTANCY AND CO.	0.	0.	0.	0.	0.
BASE CONSTRUCTION	0.	0.	0.	0.	0.
BASE ASS. AND CO.	0.	0.	0.	0.	0.
OPERATIONS, MILITARY	4109.	2104.	8414.	0.	10518.
OPERATIONS, CIVILIANS	776.	2142.	0.	0.	2142.
INFFECT EMPLOYMENT	971.	0.	0.	0.	0.
TOTAL	5856.	4245.	8414.	0.	12659.

NET IMMIGRATION FROM 1960, YEARS

APPENDIX B

(Tables B-1 through B-13)

Detailed social impacts in Beaver County, Utah (1982-1994, inclusive).

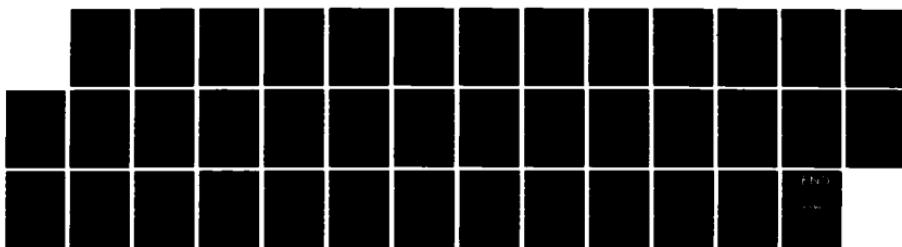
Table B-1. (Page 1 of 3)
SOCIAL IMPACTS DURING 1982 IN Beaver County, Ut

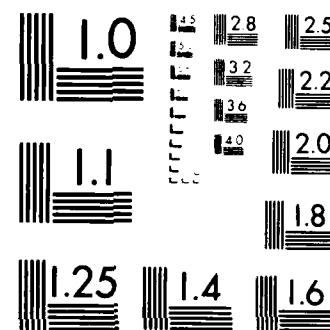
EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING FAM	MULTI FAM	MOBILE HOME
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	49 4	51 9	0 0	0 0	0 0
BASE ASS & CO	0 0	0 0	0 0	0 0	51 9
SHELTER ASS & CO	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	0 0	0 0	0 0	0 0	0 0
OPERATIONS, CIVILIAN	0 0	0 0	0 0	0 0	0 0
INDIRECT EMPLOYMENT	0 0	0 0	0 0	0 0	0 0
EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	10-12	K-6	TEACHERS 10-12
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	28 3	12 9	10 3	1 1	0 6
BASE ASS & CO	0 0	0 0	0 0	0 0	0 5
SHELTER ASS & CO	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	0 0	0 0	0 0	0 0	0 0
OPERATIONS, CIVILIAN	0 0	0 0	0 0	0 0	0 0
INDIRECT EMPLOYMENT	0 0	0 0	0 0	0 0	0 0
COMMUNITY SCHOOLS	0 1	0 0	0 0		
EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	0 3	0 5	0 1	0 4	0 7
BASE ASS & CO	0 0	0 2	0 0	0 0	0 4
SHELTER ASS & CO	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	0 0	0 0	0 0	0 0	0 0
OPERATIONS, CIVILIAN	0 0	0 0	0 0	0 0	0 0
INDIRECT EMPLOYMENT	0 0	0 0	0 0	0 0	0 0
EMPLOYMENT CATEGORY	INCORNE COMMUNITIES BASE	(1000\$)	CAMPS	COMMUNITIES BASE	RETAIL EXPEND (1000\$) Camps
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	2065 0	0 0	1610 0	480 1	99 9
BASE ASS & CO	0 0	0 0	0 0	0 0	307 8
SHELTER ASS & CO	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	0 0	0 0	0 0	0 0	0 0
OPERATIONS, CIVILIAN	0 0	0 0	0 0	0 0	0 0
INDIRECT EMPLOYMENT	377 0	0 0	0 0	87 7	0 0
					36 5
COMMERCIAL EXPEND COMMUNITIES BASE	(1000\$)	CAMPS	COMMERCIAL EXPEND COMMUNITIES BASE	(1000\$) Camps	

AD-A149 919 DEPLOYMENT AREA SELECTINN AND LAND
WITHDRAWAL/ACQUISITION M-X/MPS (M-X/MU. . (U) HENNINGSON
DURHAM AND RICHARDSON SANTA BARBARA CA 02 OCT 81
UNCLASSIFIED M-X-ETR-28 2/2

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS

Table B-1. (Page 2 of 3)

EMPLOYMENT CATEGORY	ACRES OF SCHOOLS		
	K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0
SHELTER CONSTRUCTION	1.1	0.5	0.4
BASE ASS. & CO.	0.0	0.0	0.0
SHELTER ABS. & CO.	0.0	0.0	0.0
OPERATIONS, MILITARY	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0
INDIRECT EMPLOYMENT	0.0	0.0	0.0
ACRES HOUSING			
BING FAM.	0.0	0.0	0.0
MULT FAM.	0.0	0.0	0.0
MOBILE HOME	10.4	0.7	1.2
ACRES RESIDENTIAL STREETS			
ARTERIAL		COLLECTOR	MINOR
Retail & Commercial Streets	1.2	1.4	1.4
TOTAL LINEAR FEET OF STREETS			
	769.1	1680.7	2398.6
ACRES IN PLAYGROUNDS			
ACRES IN NEIGHBORHOOD PARKS	—	0.2	
ACRES OF OPEN SPACE	—	0.7	
ACRES FOR RETAIL BUILDINGS	—	0.2	
ACRES FOR RETAIL PARKING	—	0.5	
TOTAL RETAIL ACRES	—	0.7	
ACRES FOR COMMERCIAL BUILDINGS	—	0.2	
ACRES FOR COMMERCIAL PARKING	—	0.4	
TOTAL COMMERCIAL ACRES	—	0.6	
NUMBER OF INDUSTRIAL EMPLOYEES	13.1		
90 FT. OF INDUSTRIAL BUILDING	7205.0		
90 FT. OF INDUSTRIAL PARKING	3406.0		
50 FT. OF ANCILLARY IND. USES	2122.2		
ACRES FOR INDUSTRY (TOTAL)	0.3		
ACRES FOR SOLID WASTE DISPOSAL	0.0		
POUNDS OF SOLID WASTE	890.0		
CUBIC YARDS OF SOLID WASTE	432.5		

RESIDENTIAL COSTS	CONSTRUCTION			SEWAGE	WATER	ELEC & GAS
	BING	FAM.	MULT			
BING FAM.	0.0	0.0	0.0	0.0	0.0	0.0
MULT FAM.	0.0	0.0	0.0	0.0	0.0	0.0
MOBILE HOME	0.0	37380.0	24297.0	24297.0	23923.2	23923.2
CONSTRUCTION COSTS FOR						
ALL SCHOOLS	—	272126.4				
POLICE FACILITIES	—	10252.0				
FIRE PROTECTION FACILITIES	—	8330.4				
GOVERNMENT FACILITIES	—	5126.4				
HEALTH CARE FACILITIES	—	61089.4				
LIBRARY FACILITIES	—	10680.0				
RETAIL BUILDINGS	—	276242.0				
COMMERCIAL BUILDINGS	—	101490.0				
INDUSTRIAL BUILDINGS	—	101490.0				

Table B-1. (Page 3 of 3)

STREETIS:	ARTERIAL	42337.1
	COLLECTOR	78988.6
	MINOR	71936.5
NON-RESIDENTIAL COSTS		
BSEWAGE	"	14952.0
WATER	"	4859.4
GAS AND ELECTRICITY	"	4784.6
SYSTEM-WIDE DEVELOPMENT COSTS		
SEWAGE FACILITIES	"	20932.8
WATER FACILITIES	"	11662.6
GAS AND ELECTRICITY FACILITIES	"	8612.4
WATER IMPACTS		
GALLONS OF WATER REQUIRED	"	35600.0
GALLONS OF WASTEWATER PRODUCED	"	22250.0

Table B-2. (Page 1 of 3)

SOCIAL IMPACTS DURING 1983 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING. FAM.	MULT. FAM.	MOBILE HOME				
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0				
SHELTER CONSTRUCTION	228.6	240.0	0.0	0.0	240.0				
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0				
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0				
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0				
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0				
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0				
EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	STUDENTS 10-12	K-6	TEACHERS 7-9 10-12				
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0				
SHELTER CONSTRUCTION	130.8	39.4	47.6	5.2	2.6 2.2				
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0				
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0				
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0				
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0				
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0				
CITY SCHOOLS	0.3	0.1	0.1						
EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH	
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SHELTER CONSTRUCTION	1.2	2.5	0.4	2.1	3.3	2.1	1.4	0.4	
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EMPLOYMENT CATEGORY	COMMUNITIES (1000's)	CAMPS	COMMUNITIES (1000's)	CAMPS	RETAIL EXPEND. (1000's)	CAMPS	COMMUNITIES (1000's)	COMMERCIAL EXPEND. (1000's)	CAMP
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	7735.0	0.0	7490.0	1798.4	0.0	0.0	464.4	1160.3	299.6
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	1696.5	0.0	0.0	394.4	0.0	0.0	0.0	294.5	0.0

EMPLOYMENT CATEGORY	K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0
SHELTER CONSTRUCTION	5.2	2.4	1.9
BASE ASS & CO.	0.0	0.0	0.0
SHELTER ASS & CO.	0.0	0.0	0.0
OPERATIONS, MILITARY	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0
INDIRECT EMPLOYMENT	0.0	0.0	0.0

ACRES HOUSING	ARTERIAL	ACRES RESIDENTIAL STREETS	COLLECTOR	MINOR
SING FAM	0.0	0.0	0.0	0.0
MULT. FAM	0.0	0.0	0.0	0.0
MOBILE HOM	46.0	3.0	5.7	6.1
RETAIL & COMMERCIAL STREETS		5.3	6.3	6.7
TOTAL LINEAR FEET OF STREETS	3643.8	8695.5	11089.9	
ACRES IN PLAYGROUNDS	0.8			
ACRES IN NEIGHBORHOOD PARKS	1.1			
ACRES OF OPEN SPACE	3.3			
ACRES FOR RETAIL BUILDINGS	0.7			
ACRES FOR RETAIL PARKING	2.1			
TOTAL RETAIL ACRES	2.8			
ACRES FOR COMMERCIAL BUILDINGS	0.7			
ACRES FOR COMMERCIAL PARKING	1.6			
TOTAL COMMERCIAL ACRES	2.3			
NUMBER OF INDUSTRIAL EMPLOYEES	552			
50 FT OF INDUSTRIAL BUILDING	30360.0			
90. FT. OF INDUSTRIAL PARKING	14352.0			
50. FT. OF ANCILLARY IND. USES	8942.4			
ACRES FOR INDUSTRY (TOTAL)	1.2			
ACRES FOR SOLID WASTE DISPOSAL	0.0			
POUNDS OF SOLID WASTE	4115.0			
CUBIC YARDS OF SOLID WASTE	1999.9			

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING FAM	0.0	0.0	0.0	0.0
MULT. FAM	0.0	0.0	0.0	0.0
MOBILE HOM	0.0	172830.0	112339.3	110611.2
CONSTRUCTION COSTS FOR:				
ALL SCHOOLS	1258202.4			
POLICE FACILITIES	47404.8			
FIRE PROTECTION FACILITIES	38316.1			
GOVERNMENT FACILITIES	23702.4			
HEALTH CARE FACILITIES	261453.6			
LIBRARY FACILITIES	47360.0			
RETAIL BUILDINGS	1079532.6			
COMMERCIAL BUILDINGS	1200027.5			
INDUSTRIAL BUILDINGS	7101050.0			

Table B-2. (Page 3 of 3)

STREETS	
ARTERIAL	196767.0
COLLECTOR	365211.4
MINOR	332697.6
NON-RESIDENTIAL COSTS	
SEWAGE	= 69132.0
WATER	= 22467.9
GAS AND ELECTRICITY	= 22122.2
SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 96784.8
WATER FACILITIES	= 53923.0
GAS AND ELECTRICITY FACILITIES	= 39820.0
WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 164600.0
GALLONS OF WASTEWATER PRODUCED	= 102875.0

Table B-3. (Page 1 of 3)
SOCIAL IMPACTS DURING 1984 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING. FAM	MULTI FAM	MOBILE HOME
BASE CONSTRUCTION	67.2	70.6	17.6	10.6	42.3
SHELTER CONSTRUCTION	499.8	520.6	0.0	0.0	520.6
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO.	12.9	13.1	1.3	1.3	10.5
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	456.1	478.9	47.9	47.9	383.1

EMPLOYMENT CATEGORY	K-6	7-9	10-12	K-6	TEACHERS 7-9	TEACHERS 10-12
BASE CONSTRUCTION	38.5	17.5	14.0	1.5	0.8	0.6
SHELTER CONSTRUCTION	283.6	128.9	103.1	11.3	5.6	4.7
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO.	7.2	3.3	2.6	0.3	0.1	0.1
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	122.3	95.6	44.3	4.9	2.4	2.0

COMMUNITY SCHOOLS 1.1 0.3 0.2

EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	0.4	0.7	0.1	0.6	1.0	0.7	0.4	0.1
SHELTER CONSTRUCTION	2.7	5.4	0.9	4.5	7.1	4.5	2.9	0.9
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO.	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.0
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	1.9	5.7	0.7	3.2	5.1	2.6	2.1	0.6

EMPLOYMENT CATEGORY	COMMUNITIES INCOME BASE	CAMPB COMMUNITIES INCOME BASE	RETAIL EXPEND. (1000\$)	CAMPS COMMUNITIES INCOME BASE	COMMERCIAL EXPEND. (1000\$)	COMMUNITIES Camps
BASE CONSTRUCTION	1293.0	3080.0	301.1	238.7	0.0	154.0
SHELTER CONSTRUCTION	16450.0	0.0	19960.0	3824.6	0.0	2467.9
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO.	300.0	0.0	325.0	18.6	0.0	0.0
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	10672.0	0.0	2481.2	0.0	1600.8	0.0

Table B-3. (Page 2 of 3)

EMPLOYMENT CATEGORY	K-6	7-9	10-12	ACRES OF SCHOOLS
BASE CONSTRUCTION	1.3	0.7	0.6	
SHELTER CONSTRUCTION	11.3	5.2	4.1	
BASE ASS. & CO.	0.0	0.0	0.0	
SHELTER ASS. & CO.	0.3	0.1	0.1	
OPERATIONS, MILITARY	0.0	0.0	0.0	
OPERATIONS, CIVILIAN	0.0	0.0	0.0	
INDIRECT EMPLOYMENT	4.9	2.2	1.8	

ACRES HOUSING	ACRES RESIDENTIAL STREETS	ARTERIAL	COLLECTOR	MINOR
SING. FAM.	22.3	0.9	0.6	3.6
MULT. FAM.	6.0	0.7	1.1	0.7
MOBILE HOME	191.3	12.1	22.7	24.2
RETAIL & COMMERCIAL STREETS	24.1	26.7	31.3	
TOTAL LINEAR FEET OF STREETS	16452.8	37329.9	52047.0	
ACRES IN PLAYGROUNDS	-	3.3		
ACRES IN NEIGHBORHOOD PARKS	-	4.4		
ACRES OF OPEN SPACE	-	13.4		
ACRES FOR RETAIL BUILDINGS	-	2.1		
ACRES FOR RETAIL PARKING	-	6.2		
TOTAL RETAIL ACRES	-	8.3		
ACRES FOR COMMERCIAL BUILDINGS	-	1.9		
ACRES FOR COMMERCIAL PARKING	-	4.9		
TOTAL COMMERCIAL ACRES	-	6.8		
NUMBER OF INDUSTRIAL EMPLOYEES	-	191.2		
50 FT. OF INDUSTRIAL BUILDING	-	99660.0		
50 FT. OF INDUSTRIAL PARKING	-	47112.0		
50 FT. OF ANCILLARY IND. USES	-	29354.4		
ACRES FOR INDUSTRY (TOTAL)	-	4.0		
ACRES FOR SOLID WASTE DISPOSAL	-	0.1		
POUNDS OF SOLID WASTE	-	16745.0		
CUBIC YARDS OF SOLID WASTE	-	8138.1		

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING. FAM.	2887740.0	80215.0	52139.8	64172.0
MULT. FAM.	1614262.6	28698.0	18653.7	22958.4
MOBILE HOME	0.0	688734.0	447677.1	440789.8

CONSTRUCTION COSTS FOR:	=	4344269.5
ALL SCHOOLS	=	192902.4
POLICE FACILITIES	=	156733.2
FIRE PROTECTION FACILITIES	=	76451.2
GOVERNMENT FACILITIES	=	1149376.9
HEALTH CARE FACILITIES	=	200940.0
LIBRARY FACILITIES	=	3236175.0
RETAIL BUILDINGS	=	3553926.0
COMMERCIAL BUILDINGS	=	1191700.0
INDUSTRIAL BUILDINGS	=	

Table B-3. (Page 3 of 3)

STREETS	ARTERIAL	888453. 6
	COLLECTOR	1367840. 6
	MINOR	1561409. 6
NON-RESIDENTIAL COSTS		
SEWAGE		= 319058. 8
WATER		= 103694. 1
GAS AND ELECTRICITY		= 105584. 0
SYSTEM-WIDE DEVELOPMENT COSTS		
SEWAGE FACILITIES		= 446682. 3
WATER FACILITIES		= 248863. 9
GAS AND ELECTRICITY FACILITIES	-	= 190031. 3
WATER IMPACTS		
GALLONS OF WATER REQUIRED		= 669800. 0
GALLONS OF WASTEWATER PRODUCED	-	= 418625. 0

Table B-4. (Page 1 of 3)

SOCIAL IMPACTS DURING 1985 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING. FAM	MULT. FAM	MOBILE HOME
BASE CONSTRUCTION	710.6	746.1	186.5	111.9	447.7
SHELTER CONSTRUCTION	988.6	1038.0	0.0	0.0	1038.0
BASE ASS & CO	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO	11.4	12.0	1.8	1.2	9.0
OPERATIONS, MILITARY	3.8	4.0	1.0	0.4	2.6
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	1388.6	1438.0	218.7	145.8	1073.5

EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	STUDENTS 10-12	K-6	TEACHERS 7-9	TEACHERS 10-12
BASE CONSTRUCTION	406.4	184.7	147.8	16.3	8.0	6.7
SHELTER CONSTRUCTION	965.5	257.0	205.6	22.6	11.2	9.3
BASE ASS & CO	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO	6.5	3.0	2.4	0.3	0.1	0.1
OPERATIONS, MILITARY	1.9	0.9	0.7	0.1	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	372.3	167.2	135.4	14.9	7.4	6.2

COMMUNITY SCHOOLS

3.4

1.0

0.6

EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	3.8	7.7	1.4	6.4	10.2	7.0	4.2	1.3
SHELTER CONSTRUCTION	3.3	10.7	1.7	8.9	14.2	8.9	5.4	1.8
BASE ASS & CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.0
OPERATIONS, MILITARY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	3.8	17.5	2.1	9.7	15.6	7.8	6.4	1.9

EMPLOYMENT CATEGORY	INCOME (1000\$)	COMMUNITIES BASE	CAMPS	COMMUNITIES BASE	CAMPS	RETAIL EXPEND. (1000\$)	COMMUNITIES BASE	COMMERCIAL EXPEND. (1000\$)	CAMPS
BASE CONSTRUCTION	13265.0	32725.0	0	3084.1	2536.2	0	1789.8	1636.3	0
SHELTER CONSTRUCTION	32375.0	0.0	31605.0	7527.2	0.0	1959.5	1856.3	0.0	1264.2
BASE ASS & CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS & CO	250.0	0.0	325.0	15.5	0.0	20.1	10.0	0.0	0.0
OPERATIONS, MILITARY	65.0	260.0	0.0	6.0	16.1	0.0	3.9	10.4	13.0
OPERATIONS, CIVILIAN	39.4	0.0	0.0	9.2	0.0	0.0	3.9	0.0	0.0
INDIRECT EMPLOYMENT	31537.5	0.0	0.0	7337.5	0.0	0.0	4730.6	0.0	0.0

Table B-4. (Page 2 of 3)

ACRES OF SCHOOLS

EMPLOYMENT CATEGORY	K-6	7-9	10-12
BASE CONSTRUCTION	16.3	7.4	5.7
SHELTER CONSTRUCTION	22.6	10.3	8.2
BASE ASS. & CO.	0.0	0.0	0.0
SHELTER ASS. & CO.	0.3	0.1	0.1
OPERATIONS, MILITARY	0.1	0.0	0.0
OPERATIONS, CIVILIAN	0.0	0.0	0.0
INDIRECT EMPLOYMENT	14.9	6.8	5.4

ACRES HOUSING

ARTERIAL

COLLECTOR

MINOR

	ACRES RESIDENTIAL STREETS		
SING. FAM	136.0	5.6	22.0
MULT. FAM	25.9	3.0	4.8
MOBILE HOME	518.2	32.7	61.6
RETAIL & COMMERCIAL STREETS	72.7	77.3	99.5
TOTAL LINEAR FEET OF STREETS	49663.1	107200.0	165410.5
ACRES IN PLAYGROUNDS	-	10.1	
ACRES IN NEIGHBORHOOD PARKS	-	13.1	
ACRES OF OPEN SPACE	-	40.2	
ACRES FOR RETAIL BUILDINGS	-	5.9	
ACRES FOR RETAIL PARKING	-	17.8	
TOTAL RETAIL ACRES	-	23.8	
ACRES FOR COMMERCIAL BUILDINGS	-	3.6	
ACRES FOR COMMERCIAL PARKING	-	13.9	
TOTAL COMMERCIAL ACRES	-	19.4	
NUMBER OF INDUSTRIAL EMPLOYEES	-	536.8	
SQ. FT. OF INDUSTRIAL BUILDING	-	295240.0	
SQ. FT. OF INDUSTRIAL PARKING	-	139568.0	
SQ. FT. OF ANCILLARY IND. USES	-	86961.6	
ACRES FOR INDUSTRY (TOTAL)	-	12.0	
ACRES FOR SOLID WASTE DISPOSAL	-	0.2	
POUNDS OF SOLID WASTE	-	30293.0	
CUBIC YARDS OF SOLID WASTE	-	24443.4	

RESIDENTIAL COSTS

CONSTRUCTION

SEWAGE

WATER

ELEC & GAS

SING. FAM	17626390.0	489621.9	318254.3	391697.6
MULT. FAM	7001363.0	124468.7	80904.7	99373.0
MOBILE HOME	0.0	1665354.4	1212480.4	1193826.8

CONSTRUCTION COSTS FOR

ALL SCHOOLS	= 13015071.0
POLICE FACILITIES	= 579398.4
FIRE PROTECTION FACILITIES	= 470761.2
GOVERNMENT FACILITIES	= 289699.2
HEALTH CARE FACILITIES	= 3452249.0
LIBRARY FACILITIES	= 603540.0
RETAIL BUILDINGS	= 9313012.0
COMMERCIAL BUILDINGS	= 10164200.0
INDUSTRIAL BUILDINGS	= 1857200.0

Table B-4. (Page 3 of 3)

STREETS	
ARTERIAL	2691809.8
COLLECTOR	4502398.5
MINOR	4962314.5

NON-RESIDENTIAL COSTS	
SEWAGE	= 991778.0
WATER	= 322327.8
GAS AND ELECTRICITY	= 337019.8
SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 1388489.3
WATER FACILITIES	= 773586.9
GAS AND ELECTRICITY FACILITIES	= 606635.8

WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 2011800.0
GALLONS OF WASTEWATER PRODUCED	= 1257375.0

Table B-5. (Page 1 of 3)
SOCIAL IMPACTS DURING 1986 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING. FAM	MULT. FAM	MOBILE HOM				
BASE CONSTRUCTION	815 3	856 0	214 0	128 4	313 6				
SHELTER CONSTRUCTION	636 4	668 2	0 0	0 0	669 2				
BASE ASS & CO	0 0	0 0	0 0	0 0	0 0				
SHELTER ASS & CO	363 9	382 1	57 3	38 2	286 6				
OPERATIONS, MILITARY	24 7	25 9	7 8	3 9	14 3				
OPERATIONS, CIVILIAN	37 5	39 4	11 8	9 9	21 7				
INDIRECT EMPLOYMENT	2337 1	2454 0	368 1	245 4	1840 5				
EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	10-12	K-6 7-9	TEACHERS 10-12				
BASE CONSTRUCTION	466 3	212 0	169 6	18 7	7 2				
SHELTER CONSTRUCTION	364 0	165 5	132 4	14 6	7 2				
BASE ASS & CO	0 0	0 0	0 0	0 0	0 0				
SHELTER ASS & CO	208 1	94 6	75 7	8 3	4 1				
OPERATIONS, MILITARY	12 4	9 6	4 5	0 5	0 2				
OPERATIONS, CIVILIAN	10 1	4 6	3 7	0 4	0 2				
INDIRECT EMPLOYMENT	626 6	284 8	227 9	25 1	12 4				
COMMUNITY SCHOOLS	4 2	1 3	0 8						
EMPLOYMENT CATEGORY	DOCTORS	NURSEB	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH	
BASE CONSTRUCTION	4 4	8 8	1 6	7 3	11 7	8 0	4 8	1 5	
SHELTER CONSTRUCTION	3 4	6 9	1 2	5 7	9 2	5 7	3 8	1 1	
BASE ASS & CO	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
SHELTER ASS & CO	2 0	3 9	0 7	3 3	5 2	3 4	2 2	0 7	
OPERATIONS, MILITARY	0 0	0 1	0 0	0 0	0 1	0 8	0 1	0 0	
OPERATIONS, CIVILIAN	0 2	0 3	0 1	0 3	0 4	0 2	0 2	0 1	
INDIRECT EMPLOYMENT	9 8	29 4	3 5	16 4	26 2	13 1	10 8	3 3	
EMPLOYMENT CATEGORY	INCOME COMMUNITIES BASE	CAMPB	COMMUNITIES BASE	RETAIL EXPEND. (1000\$)	CAMPB	COMMUNITIES BASE	CAMPB	COMMERCIAL EXPEND (1000\$)	CAMPB
BASE CONSTRUCTION	152260 0	37555 0	0 0	3547 9	2910 5	0 0	2289 0	1677 8	0 0
SHELTER CONSTRUCTION	22085 0	0 0	17145 0	5134 8	0 0	1187 0	3312 8	0 0	765 8
BASE ASS & CO	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SHELTER ASS & CO	8200 0	0 0	10000 0	908 4	0 0	620 0	328 0	0 0	100 0
OPERATIONS, MILITARY	410 0	1640 0	0 0	38 1	101 7	0 0	24 6	69 6	0 0
OPERATIONS, CIVILIAN	945 6	0 0	0 0	219 9	0 0	0 0	141 8	0 0	0 0
INDIRECT EMPLOYMENT	45022 5	0 0	0 0	10467 7	0 0	0 0	6753 4	0 0	0 0

Table B-5. (Page 2 of 3)

		ACRES OF SCHOOLS	
EMPLOYMENT CATEGORY	K-6	7-9	10-12
BASE CONSTRUCTION	18.7	8.5	6.8
SHELTER CONSTRUCTION	14.6	6.6	5.3
BASE ASS & CO	0.0	0.0	0.0
SHELTER ASS & CO	8.3	3.8	3.0
OPERATIONS, MILITARY	0.5	0.2	0.2
OPERATIONS, CIVILIAN	0.4	0.2	0.1
INDIRECT EMPLOYMENT	25.1	11.4	9.1

	ACRES HOUSING	ACRES RESIDENTIAL STREETS	ARTERIAL	COLLECTOR	MINOR
SING. FAM	219.7	9.1	6.4	35.6	
MULT. FAM	42.2	4.9	7.8	4.8	
MOBILE HOM	669.0	42.2	79.3	84.5	
RETAIL & COMMERCIAL STREETS		98.8	103.0	137.3	
TOTAL LINEAR FEET OF STREETS		67508.7	142812.0	228433.8	
ACRES IN PLAYGROUNDS	=	13.3			
ACRES IN NEIGHBORHOOD PARKS	=	17.2			
ACRES OF OPEN SPACE	=	53.1			
ACRES FOR RETAIL BUILDINGS	=	6.5			
ACRES FOR RETAIL PARKING	=	19.6			
TOTAL RETAIL ACRES	=	26.1			
ACRES FOR COMMERCIAL BUILDINGS	=	6.1			
ACRES FOR COMMERCIAL PARKING	=	15.3			
TOTAL COMMERCIAL ACRES	=	21.4			
NUMBER OF INDUSTRIAL EMPLOYEES	=	673.2			
50 FT OF INDUSTRIAL BUILDING	=	370260.0			
50 FT OF INDUSTRIAL PARKING	=	175032.0			
50 FT OF ANCILLARY IND. USES	=	109058.4			
ACRES FOR INDUSTRY (TOTAL)	=	15.0			
ACRES FOR SOLID WASTE DISPOSAL	=	0.2			
POUNDS OF SOLID WASTE	=	66345.0			
CUBIC YARDS OF SOLID WASTE	=	32243.7			

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING. FAM	28469568.0	790821.3	914033.8	632657.1
MULT. FAM	11388923.0	202469.8	131605.3	161975.8
MOBILE HOM	0.0	2408270.3	1565375.6	1541292.9

CONSTRUCTION COSTS FOR	
ALL SCHOOLS	= 16237436.0
POLICE FACILITIES	= 764294.4
FIRE PROTECTION FACILITIES	= 620989.2
GOVERNMENT FACILITIES	= 382147.2
HEALTH CARE FACILITIES	= 4553921.0
LIBRARY FACILITIES	= 726140.0
RETAIL BUILDINGS	= 10225591.0
COMMERCIAL BUILDINGS	= 1117101.0
INDUSTRIAL BUILDINGS	= 11107000.0

Table B-5. (Page 3 of 3)

STREETS	
ARTERIAL	3649470 .5
COLLECTOR	5998105 .5
MINOR	6853613 .5
 NON-RESIDENTIAL COSTS	
SEWAGE	= 1360624 .5
WATER	= 442203 0
GAS AND ELECTRICITY	= 467185 2
 SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 1904874 .4
WATER FACILITIES	= 1061287 .1
GAS AND ELECTRICITY FACILITIES	= 840933 .3
 WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 2653800 .0
GALLONS OF WASTEWATER PRODUCED	= 1658623 .0

Table B-6. (Page 1 of 3)
SOCIAL IMPACTS DURING 1987 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING FAM	MULT FAM	MUBLE HOM
BASE CONSTRUCTION	714.7	750.5	187.6	112.6	450.3
SHELTER CONSTRUCTION	77.8	81.7	0.0	0.0	81.7
BASE ASS. & CO.	17.5	18.4	4.6	2.8	11.0
SHELTER ASS. & CO.	186.4	195.7	48.9	29.4	117.4
OPERATIONS, MILITARY	227.6	239.0	83.7	39.9	119.5
OPERATIONS, CIVILIAN	189.6	199.1	69.7	29.9	99.6
INDIRECT EMPLOYMENT	2791.4	2931.0	732.8	439.7	1758.6

EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	10-12	K-6	TEACHERS 7-9	10-12
BASE CONSTRUCTION	408.8	185.8	148.7	16.4	8.1	6.8
SHELTER CONSTRUCTION	44.5	20.2	16.2	1.8	0.9	0.7
BASE ASS. & CO.	10.0	4.5	3.6	0.4	0.2	0.2
SHELTER ASS. & CO.	106.6	48.5	38.8	4.3	2.1	1.8
OPERATIONS, MILITARY	113.9	51.8	41.4	4.6	2.3	1.9
OPERATIONS, CIVILIAN	50.9	23.1	18.5	2.0	1.0	0.8
INDIRECT EMPLOYMENT	748.9	340.2	272.2	29.9	14.8	12.4

COMMUNITY SCHOOLS

EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	3.9	7.7	1.4	6.4	10.3	7.0	4.2	1.3
SHELTER CONSTRUCTION	0.4	0.8	0.1	0.7	1.1	0.6	0.5	0.1
BASE ASS. & CO.	0.1	0.2	0.0	0.2	0.3	0.2	0.1	0.0
SHELTER ASS. & CO.	1.0	2.0	0.4	1.7	2.7	1.7	1.1	0.3
OPERATIONS, MILITARY	0.2	0.7	0.2	0.4	0.6	0.6	1.3	0.2
OPERATIONS, CIVILIAN	0.8	2.4	0.3	1.3	2.1	1.1	0.9	0.3
INDIRECT EMPLOYMENT	11.7	35.2	4.1	19.5	31.3	15.6	12.9	3.9

EMPLOYMENT CATEGORY	COMMUNITIES BASE	INCOME (1000\$)	CAMPS	COMMUNITIES BASE	RETAIL EXPEND. (1000\$)	CAMPB	COMMUNITIES BASE	COMMERCIAL EXPEND (1000\$)	CAMPS
BASE CONSTRUCTION	13545.0	32970.0	0.0	3149.2	2355.2	0.0	2031.8	1648.9	0.0
SHELTER CONSTRUCTION	5075.0	0.0	0.0	1179.9	0.0	0.0	761.3	0.0	0.0
BASE ASS. & CO.	250.0	625.0	0.0	19.4	48.4	0.0	12.3	31.3	0.0
SHELTER ASS. & CO.	3250.0	0.0	4075.0	325.5	0.0	252.6	210.0	163.0	0.0
OPERATIONS, MILITARY	3777.5	15110.0	0.0	351.3	736.8	0.0	226.7	604.4	0.0
OPERATIONS, CIVILIAN	3940.0	0.0	0.0	916.0	0.0	0.0	591.0	0.0	0.0
INDIRECT EMPLOYMENT	52248.0	0.0	0.0	12217.4	0.0	0.0	7889.2	0.0	0.0

Table B-6. (Page 2 of 3)

EMPLOYMENT CATEGORY		ACRES OF SCHOOLS K-6 7-9 10-12
BASE CONSTRUCTION	16.4	7.4 5.9
SHELTER CONSTRUCTION	1.8	0.8 0.6
BASE ASS. & CO.	0.4	0.2 0.1
SHELTER ASS. & CO.	4.3	1.9 1.6
OPERATIONS, MILITARY	4.6	2.1 1.7
OPERATIONS, CIVILIAN	2.0	0.9 0.7
INDIRECT EMPLOYMENT	29.9	13.6 10.9

	ACRES HOUSING	ACRES RESIDENTIAL STREETS	
	ARTERIAL	COLLECTOR	MINOR
SING FAM	375.7	15.9	10.9 60.8
MULT FAM	65.0	7.5	12.1 7.1
MOBILE HOM	527.6	33.3	62.7 66.6
RETAIL & COMMERCIAL STREETS	99.1	94.2	148.4
TOTAL LINEAR FEET OF STREETS	67683.7	130563.9	246788.3
ACRES IN PLAYGROUNDS	-	12.7	
ACRES IN NEIGHBORHOOD PARKS	-	16.3	
ACRES OF OPEN SPACE	-	30.8	
ACRES FOR RETAIL BUILDINGS	-	5.8	
ACRES FOR RETAIL PARKING	-	17.4	
TOTAL RETAIL ACRES	-	23.2	
ACRES FOR COMMERCIAL BUILDINGS	-	5.4	
ACRES FOR COMMERCIAL PARKING	-	13.5	
TOTAL COMMERCIAL ACRES	-	19.0	
NUMBER OF INDUSTRIAL EMPLOYEES	-	721.7	
50 FT OF INDUSTRIAL BUILDING	-	39693.0	
50 FT OF INDUSTRIAL PARKING	-	18764.0	
50 FT OF ANCILLARY IND. USES	-	11691.4	
ACRES FOR INDUSTRY (TOTAL)	-	16.1	
ACRES FOR SOLID WASTE DISPOSAL	-	0.2	
POUNDS OF SOLID WASTE	-	63340.0	
CUBIC YARDS OF SOLID WASTE	-	30880.4	

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING FAM	48696744.0	1392687.4	879246.8	1082149.9
MULT FAM	17551470.0	312026.1	202817.0	249620.9
MOBILE HOM	0.0	1899409.8	1234616.4	1215622.3

CONSTRUCTION COSTS FOR:

ALL SCHOOLS	= 14270808.0
POLICE FACILITIES	= 731980.8
FIRE PROTECTION FACILITIES	= 574734.4
GOVERNMENT FACILITIES	= 365990.4
HEALTH CARE FACILITIES	= 4361386.0
LIBRARY FACILITIES	= 762480.0
RETAIL BUILDINGS	= 9083535.0
COMMERCIAL BUILDINGS	= 9911750.0
INDUSTRIAL BUILDINGS	= 11906050.0

Table B-6. (Page 3 of 3)

STREETS	
ARTERIAL	3654921.3
COLLECTOR	5483688.0
MINOR	7403654.5

NON-RESIDENTIAL COSTS	
SEWAGE	= 1425649.4
WATER	= 463336.1
GAS AND ELECTRICITY	= 509478.6
SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 1995909.0
WATER FACILITIES	= 1112006.5
GAS AND ELECTRICITY FACILITIES	= 917061.5
WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 2541600.0
GALLONS OF WASTEWATER PRODUCED	= 1588500.0

Table B-7. (Page 1 of 3)
SOCIAL IMPACTS DURING 1988 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING. FAM.	MULT. FAM.	MOBILE HOME
BASE CONSTRUCTION	264.4	277.7	67.4	41.7	166.6
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	26.4	27.7	11.1	5.3	11.1
OPERATIONS, MILITARY	498.5	523.5	235.6	104.7	183.2
OPERATIONS, CIVILIAN	603.6	633.7	289.2	126.7	221.8
INDIRECT EMPLOYMENT	1933.6	2051.3	820.5	410.3	820.5

EMPLOYMENT CATEGORY	STUDENTS			TEACHERS		
	K-6	7-9	10-12	K-6	7-9	10-12
BASE CONSTRUCTION	151.3	68.8	55.0	6.1	3.0	2.5
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	15.1	6.9	5.5	0.6	0.3	0.2
OPERATIONS, MILITARY	249.5	113.4	90.7	10.0	4.9	4.1
OPERATIONS, CIVILIAN	161.8	73.6	58.8	6.5	3.2	2.7
INDIRECT EMPLOYMENT	523.8	238.1	190.5	21.0	10.4	8.7

COMMUNITY SCHOOLS 2.8 0.8 0.9

EMPLOYMENT CATEGORY	DOCTORS			NURSES			DENTISTS			OTHER HEALTH			HOSPITAL BEDS			POLICE			FIREMEN			MENTAL HEALTH		
	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS	DOCTORS	NURSES	DENTISTS
BASE CONSTRUCTION	1.4	2.9	0.5	2.4	5.8	0.8	3.8	0.0	0.0	2.6	1.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.1	0.3	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
OPERATIONS, MILITARY	0.5	1.5	0.5	0.5	0.8	0.5	0.8	0.0	0.0	1.4	1.4	1.4	1.6	1.6	1.6	1.6	1.6	1.6	2.8	2.8	2.8	0.4	0.4	0.4
OPERATIONS, CIVILIAN	2.5	7.6	0.9	4.2	6.8	0.9	4.2	0.0	0.0	13.7	21.9	10.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9
INDIRECT EMPLOYMENT	6.2	24.6	2.9	13.7	21.9	2.9	13.7	0.0	0.0	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9

EMPLOYMENT CATEGORY	INCOME (1000\$)			COMMUNITIES			Camps			COMMUNITIES			Camps			RETAIL EXPEND. (1000\$)			COMMUNITIES			COMMERCIAL EXPEND. (1000\$)		
	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps	COMMUNITIES	BASE	Camps
BASE CONSTRUCTION	3320.0	12285.0	0.0	0.0	1236.9	932.1	0.0	0.0	0.0	798.0	0.0	0.0	614.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	1325.0	0.0	0.0	0.0	0.0	0.0	82.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	6275.0	33100.0	0.0	0.0	769.6	2052.2	0.0	0.0	0.0	496.5	0.0	0.0	1324.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, CIVILIAN	12095.6	0.0	0.0	0.0	2612.3	0.0	0.0	0.0	0.0	1811.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INDIRECT EMPLOYMENT	49648.0	0.0	0.0	0.0	11543.2	0.0	0.0	0.0	0.0	7447.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table B-7. (Page 2 of 3)

EMPLOYMENT CATEGORY		K-6	7-9	10-12	ACRES OF SCHOOLS
BASE CONSTRUCTION		6.1	2.8	2.2	
SHELTER CONSTRUCTION		0.0	0.0	0.0	
BASE ASS. & CO.		0.0	0.0	0.0	
SHELTER ASS. & CO.		0.6	0.3	0.2	
OPERATIONS, MILITARY		10.0	4.5	3.6	
OPERATIONS, CIVILIAN		6.3	2.9	2.4	
INDIRECT EMPLOYMENT		21.0	9.5	7.6	

	ACRES HOUSING		ACRES RESIDENTIAL STREETS		
			ARTERIAL	COLLECTOR	MINOR
SING. FAM.	473.9		19.6	13.7	76.7
MULT. FAM.	68.9		7.9	12.8	7.9
MOBILE HOM.	280.6		17.7	33.3	35.4
RETAIL & COMMERCIAL STREETS			79.6	45.8	132.0
TOTAL LINEAR FEET OF STREETS			94351.3	91260.6	219620.6
ACRES IN PLAYGROUNDS			9.9		
ACRES IN NEIGHBORHOOD PARKS			12.9		
ACRES OF OPEN SPACE			39.6		
ACRES FOR RETAIL BUILDINGS			5.1		
ACRES FOR RETAIL PARKING			15.4		
TOTAL RETAIL ACRES			20.5		
ACRES FOR COMMERCIAL BUILDINGS			4.8		
ACRES FOR COMMERCIAL PARKING			12.0		
TOTAL COMMERCIAL ACRES			16.8		
NUMBER OF INDUSTRIAL EMPLOYEES			790.4		
SQ. FT. OF INDUSTRIAL BUILDING			434720.0		
SQ. FT. OF INDUSTRIAL PARKING			205504.0		
SQ. FT. OF ANCILLARY IND. USES			128044.8		
ACRES FOR INDUSTRY (TOTAL)			17.4		
ACRES FOR SOLID WASTE DISPOSAL			0.1		
POUNDS OF SOLID WASTE			49510.0		
CUBIC YARDS OF SOLID WASTE			24061.9		

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING. FAM.	61419284.0	1706091.3	1108959.3	1364873.0
MULT. FAM.	18599836.0	330663.8	214931.4	264531.0
MOBILE HOM.	0.0	1010307.9	636700.1	646597.1

CONSTRUCTION COSTS FOR:	
ALL SCHOOLS	= 10598477.0
POLICE FACILITIES	= 570353.2
FIRE PROTECTION FACILITIES	= 463413.6
GOVERNMENT FACILITIES	= 285177.6
HEALTH CARE FACILITIES	= 3398366.5
LIBRARY FACILITIES	= 594120.0
RETAIL BUILDINGS	= 8047591.5
COMMERCIAL BUILDINGS	= 8783123.0
INDUSTRIAL BUILDINGS	= 13041600.0

Table B-7. (Page 3 of 3)

STREETS:	
ARTERIAL	2934970 5
COLLECTOR	3832944.0
MINOR	6588619.0
 NON-RESIDENTIAL COSTS	
SEWAGE	- 1218829.3
WATER	- 396118.2
GAS AND ELECTRICITY	- 495200.2
 SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	- 1706355.4
WATER FACILITIES	- 950683.6
GAS AND ELECTRICITY FACILITIES	- 619360.4
 WATER IMPACTS	
GALLONS OF WATER REQUIRED	- 1980400.0
GALLONS OF WASTEWATER PRODUCED	- 1237750.0

Table B-8. (Page 1 of 3)

SOCIAL IMPACTS DURING 1989 IN Beaver County, Ut.

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL	HOUSING	SING. FAM.	MULT. FAM.	MOBILE HOME
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	619.8	649.8	357.4	130.0	162.4	
OPERATIONS, CIVILIAN	765.4	803.6	442.0	160.7	200.9	
INDIRECT EMPLOYMENT	1074.6	1128.4	564.2	225.7	338.5	

EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	10-12	K-6	7-9	TEACHERS 10-12
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	309.7	140.8	112.6	12.4	6.1	5.1
OPERATIONS, CIVILIAN	205.2	93.3	74.6	8.2	4.1	3.4
INDIRECT EMPLOYMENT	288.1	131.0	104.8	11.5	5.7	4.8

COMMUNITY SCHOOLS

2.0 0.6 0.4

EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	0.6	1.9	0.7	1.1	1.7	21.0	3.9	0.5
OPERATIONS, CIVILIAN	3.2	9.6	1.1	5.4	8.6	4.3	3.5	1.1
INDIRECT EMPLOYMENT	4.5	13.5	1.6	7.5	12.0	6.0	3.0	1.5

EMPLOYMENT CATEGORY	COMMUNITIES INCOME (1000\$) BASE	CAMPS	COMMUNITIES INCOME (1000\$) BASE	CAMPS	RETAIL EXPEND. (1000\$) COMMUNITIES BASE	CAMPS	COMMUNITIES COMMUNITIES BASE	COMMERCIAL EXPEND. (1000\$) CAMP
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	10272.5	41090.0	0.0	959.3	2547.6	0.0	0.0	616.3
OPERATIONS, CIVILIAN	15287.2	0.0	0.0	3554.3	0.0	0.0	0.0	1643.6
INDIRECT EMPLOYMENT	42209.5	0.0	0.0	9813.7	0.0	0.0	0.0	2293.1
						6331.4	0.0	0.0

EMPLOYMENT CATEGORY	K-6	7-9	10-12	ACRES OF SCHOOLS
BASIC CONSTRUCTION	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0
BASE ASS & CO.	0.0	0.0	0.0	0.0
SHELTER ASS & CO.	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	12.4	5.6	4.5	
OPERATIONS, CIVILIAN	8.2	3.7	3.0	
INDIRECT EMPLOYMENT	11.5	5.2	4.2	

ACRES HOUSING	ACRES RESIDENTIAL STREETS		
ARTERIAL	COLLECTOR		MINOR
SING FAM 454.5	18.8	13.1	73.6
MULT. FAM. 51.6	5.9	9.6	5.9
MOBILE HOM 140.4	8.9	16.7	17.7
RETAIL & COMMERCIAL STREETS	59.1	43.4	106.9
TOTAL LINEAR FEET OF STREETS	40360.3	60107.7	177891.9
ACRES IN PLAYGROUNDS	7.3		
ACRES IN NEIGHBORHOOD PARKS	9.4		
ACRES OF OPEN SPACE	29.0		
ACRES FOR RETAIL BUILDINGS	4.5		
ACRES FOR RETAIL PARKING	13.4		
TOTAL RETAIL ACRES	17.8		
ACRES FOR COMMERCIAL BUILDINGS	4.2		
ACRES FOR COMMERCIAL PARKING	10.4		
TOTAL COMMERCIAL ACRES	14.6		
NUMBER OF INDUSTRIAL EMPLOYEES	779.6		
50 FT OF INDUSTRIAL BUILDING	428780.0		
90 FT OF INDUSTRIAL PARKING	202696.0		
50 FT. OF ANCILLARY IND. UBRSES	126295.2		
ACRES FOR INDUSTRY (TOTAL)	17.4		
ACRES FOR SOLID WASTE DISPOSAL	0.1		
POUNDS OF SOLID WASTE	36280.0		
CUBIC YARDS OF SOLID WASTE	17632.1		

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING FAM 58903440.0	1636262.3	1063970.5	1309007.8	
MULT. FAM 13941529.0	247849.4	161102.1	198279.5	
MOBILE HOM 0.0	505339.2	323417.4	323417.0	

CONSTRUCTION COSTS FOR:	
ALL SCHOOLS	= 7727004.5
POLICE FACILITIES	= 417945.6
FIRE PROTECTION FACILITIES	= 339580.8
GOVERNMENT FACILITIES	= 208972.8
HEALTH CARE FACILITIES	= 2490239.3
LIBRARY FACILITIES	= 435360.0
RETAIL BUILDINGS	= 6981064.5
COMMERCIAL BUILDINGS	= 7619119.5
INDUSTRIAL BUILDINGS	= 12163401.0

Table B-8. (Page 3 of 3)

STREETS	
ARTERIAL	2179457 5
COLLECTOR	2524523 3
MINOR	5333557 5
 NON-RESIDENTIAL COSTS	
SEWAGE	= 953780 3
WATER	= 310628 6
GAS AND ELECTRICITY	= 366141 3
 SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 1338092. 4
WATER FACILITIES	= 745508. 7
GAS AND ELECTRICITY FACILITIES	= 639034. 3
 WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 1451200. 0
GALLONS OF WASTEWATER PRODUCED	= 907000. 0

Table B-9. (Page 1 of 3)

SOCIAL IMPACTS DURING 1990 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING FAM	MULT FAM	MOBILE HOME
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	618.8	649.8	389.9	130.0	130.0
OPERATIONS, CIVILIAN	765.4	803.6	482.2	160.7	160.7
INDIRECT EMPLOYMENT	274.3	288.0	172.8	57.6	57.6

EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	STUDENTS 10-12	K-6	TEACHERS 7-9	TEACHERS 10-12
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	309.7	140.8	112.6	12.4	6.1	5.1
OPERATIONS, CIVILIAN	205.2	93.3	74.6	8.2	4.1	3.4
INDIRECT EMPLOYMENT	73.5	33.4	26.7	2.9	1.5	1.2

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EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	0.6	1.9	0.7	1.1	1.7	21.0	3.5	0.5
OPERATIONS, CIVILIAN	3.2	9.6	1.1	5.4	8.6	4.3	3.5	1.1
INDIRECT EMPLOYMENT	1.2	3.5	0.4	1.9	3.1	1.5	1.3	0.4

EMPLOYMENT CATEGORY	COMMUNITIES (1000\$)	INCOME BASE	CAMPS	COMMUNITIES BASE	RETAIL EXPEND. (1000\$)	CAMPS	COMMUNITIES BASE	COMMERCIAL EXPEND. (1000\$)	CAMPS
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	10272.5	41090.0	0.0	735.3	2347.6	0.0	0.0	616.3	0.0
OPERATIONS, CIVILIAN	19287.2	0.0	0.0	3534.3	0.0	0.0	0.0	2293.1	0.0
INDIRECT EMPLOYMENT	32451.0	0.0	0.0	7544.9	0.0	0.0	0.0	4067.6	0.0

Table B-9. (Page 2 of 3)

EMPLOYMENT CATEGORY	ACRES OF SCHOOLS		
	K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0
BASE ASS' & CO	0.0	0.0	0.0
SHELTER ASS' & CO	0.0	0.0	0.0
OPERATIONS, MILITARY	12.4	5.6	4.5
OPERATIONS, CIVILIAN	8.2	3.7	3.0
INDIRECT EMPLOYMENT	2.9	1.3	1.1
 ACRES HOUSING			
	ARTERIAL	COLLECTOR	MINOR
SING FAM	348.3	14.4	10.1
MULT FAM	34.8	4.0	6.5
MOBILE HOM	69.7	4.4	8.3
RETAIL & COMMERCIAL STREETS	40.1	27.3	76.1
TOTAL LINEAR FEET OF STREETS	27395.9	37849.1	126529.4
ACRES IN PLAYGROUNDS	-	5.0	
ACRES IN NEIGHBORHOOD PARKS	-	6.5	
ACRES OF OPEN SPACE	-	20.1	
ACRES FOR RETAIL BUILDINGS	-	3.9	
ACRES FOR RETAIL PARKING	-	11.6	
TOTAL RETAIL ACRES	-	15.4	
ACRES FOR COMMERCIAL BUILDINGS	-	3.6	
ACRES FOR COMMERCIAL PARKING	-	9.0	
TOTAL COMMERCIAL ACRES	-	12.6	
NUMBER OF INDUSTRIAL EMPLOYEES	-	712.3	
SQ FT OF INDUSTRIAL BUILDING	-	391765.0	
SQ FT OF INDUSTRIAL PARKING	-	185198.0	
SQ. FT OF ANCILLARY IND. USES	-	115392.6	
ACRES FOR INDUSTRY (TOTAL)	-	15.9	
ACRES FOR SOLID WASTE DISPOSAL	-	0.1	
POUNDS OF SOLID WASTE	-	25075.0	
CUBIC YARDS OF SOLID WASTE	-	12186.5	
 RESIDENTIAL COSTS			
	CONSTRUCTION	SEWAGE	WATER
SING FAM	45136824.0	1293800.6	814770.4
MULT FAM	9403505.0	167173.4	108462.7
MOBILE HOM	0.0	250760.1	160486.5
 CONSTRUCTION COSTS FOR			
ALL SCHOOLS	-	5662202.5	
POLICE FACILITIES	-	288864.0	
FIRE PROTECTION FACILITIES	-	234702.0	
GOVERNMENT FACILITIES	-	144432.0	
HEALTH CARE FACILITIES	-	1721140.0	
LIBRARY FACILITIES	-	300900.0	
RETAIL BUILDINGS	-	6042229.5	
COMMERCIAL BUILDINGS	-	6574476.0	
INDUSTRIAL BUILDINGS	-	11752950.0	

Table B-9. (Page 3 of 3)

STREETS	
ARTERIAL	1479359.4
COLLECTOR	1587662.8
MINOR	3795881.9
 NON RESIDENTIAL COSTS	
SEWAGE	= 68693.7
WATER	= 217325.5
GAS AND ELECTRICITY	= 257453.2
 SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 936171.1
WATER FACILITIES	= 521581.1
GAS AND ELECTRICITY FACILITIES	= 467015.7
 WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 1003000.0
GALLONS OF WASTEWATER PRODUCED	= 626875.0

Table B-10. (Page 1 of 3)

SOCIAL IMPACTS DURING 1991 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING. FAM	MULT FAM	MOBILE HOME
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	618.8	649.8	389.9	130.0	130.0
OPERATIONS, CIVILIAN	765.4	803.6	462.2	160.7	160.7
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0

EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	STUDENTS 10-12	K-6	TEACHERS 7-9	TEACHERS 10-12
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	309.7	140.8	112.6	12.4	6.1	5.1
OPERATIONS, CIVILIAN	205.2	93.3	74.6	8.2	4.1	3.4
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0	0.0

COMMUNITY SCHOOLS 1.3 0.4 0.2

EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	0.6	1.9	0.7	1.1	1.7	21.0	3.5	0.9
OPERATIONS, CIVILIAN	3.2	9.6	1.1	5.4	8.4	4.3	3.5	1.1
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

EMPLOYMENT CATEGORY	INCOME (1000\$) COMMUNITIES BASE	CAMPS	COMMUNITIES BASE	CAMPS	RETAIL EXPEND. (1000\$) COMMUNITIES BASE	CAMPS	COMMERCIAL EXPEND. (1000\$) COMMUNITIES BASE	CAMPS
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	10272.5	41090.0	0.0	935.3	2347.6	0.0	616.3	0.0
OPERATIONS, CIVILIAN	15287.2	0.0	0.0	3554.3	0.0	0.0	2293.1	0.0
INDIRECT EMPLOYMENT	17849.5	0.0	0.0	4150.0	0.0	0.0	2677.4	0.0

Table B-10. (Page 2 of 3)

EMPLOYMENT CATEGORY	ACRES OF SCHOOLS		
	K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0
OPERATIONS, MILITARY	12.4	5.6	4.5
OPERATIONS, CIVILIAN	8.2	3.7	3.0
INDIRECT EMPLOYMENT	0.0	0.0	0.0

ACRES HOUSING	ACRES RESIDENTIAL STREETS		
	ARTERIAL	COLLECTOR	MINOR
SING. FAM.	290.7	12.0	6.4
MULT. FAM.	29.1	3.3	5.4
MOBILE HOME	58.1	3.7	6.9
RETAIL & COMMERCIAL STREETS	33.5	22.8	63.5
TOTAL LINEAR FEET OF STREETS	22864.7	31589.4	105603.3
ACRES IN PLAYGROUNDS	-	4.2	-
ACRES IN NEIGHBORHOOD PARKS	-	5.5	-
ACRES OF OPEN SPACE	-	17.0	-
ACRES FOR RETAIL BUILDINGS	-	3.0	-
TOTAL RETAIL ACRES	-	8.9	-
ACRES FOR COMMERCIAL BUILDINGS	-	11.8	-
ACRES FOR COMMERCIAL PARKING	-	2.8	-
TOTAL COMMERCIAL ACRES	-	6.9	-
NUMBER OF INDUSTRIAL EMPLOYEES	-	9.7	-
80 FT. OF INDUSTRIAL BUILDING	-	611.6	-
80 FT. OF INDUSTRIAL PARKING	-	336380.0	-
50 FT. OF ANCILLARY IND. USES	-	159016.0	-
ACRES FOR INDUSTRY (TOTAL)	-	99079.2	-
ACRES FOR SOLID WASTE DISPOSAL	-	13.6	-
POUNDS OF SOLID WASTE	-	0.1	-
CUBIC YARDS OF SOLID WASTE	-	21235.0	-
	-	10320.2	-

RESIDENTIAL COSTS

	CONSTRUCTION	SEWAGE	WATER	ELEC. & GAS
SING. FAM.	37671860.0	1046440.6	680186.4	837152.4
MULT. FAM.	7848304.5	139525.4	90691.5	111620.3
MOBILE HOME	0.0	209288.1	136037.3	133944.4

CONSTRUCTION COSTS FOR:

ALL SCHOOLS	-	4954587.0
POLICE FACILITIES	-	244627.2
FIRE PROTECTION FACILITIES	-	198759.6
GOVERNMENT FACILITIES	-	1222313.6
HEALTH CARE FACILITIES	-	1457570.3
LIBRARY FACILITIES	-	254820.0
RETAIL BUILDINGS	-	4637464.0
COMMERCIAL BUILDINGS	-	5061318.3
INDUSTRIAL BUILDINGS	-	10071401.0

Table B-10. (Page 3 of 3)

STREETS	
ARTERIAL	1234693 1
COLLECTOR	1326736 0
MINOR	3168099 0
 NON-RESIDENTIAL COSTS	
SEWAGE	= 938101 7
WATER	= 181383 0
GAS AND ELECTRICITY	= 216543 4
 SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 781342 4
WATER FACILITIES	= 435319 3
GAS AND ELECTRICITY FACILITIES	= 389778 2
 WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 849400.0
GALLONS OF WASTEWATER PRODUCED	= 530875.0

Table B-11. (Page 1 of 3)

SOCIAL IMPACTS DURING 1992 IN Beaver County, Ut.

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING FAM	MULT FAM	MOBILE HOME
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	618.8	649.8	389.9	130.0	130.0
OPERATIONS, CIVILIAN	765.0	803.2	481.9	160.6	160.6
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0

EMPLOYMENT CATEGORY

	K-6	STUDENTS 7-9	10-12	K-6	TEACHERS 7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	309.7	140.8	112.6	12.4	6.1	5.1
OPERATIONS, CIVILIAN	205.1	93.2	74.6	9.2	4.1	3.4
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0	0.0

COMMUNITY SCHOOLS

1.3 0.4 0.2

EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS	POLICE	FIREMEN	MENTAL HEALTH
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	0.6	1.9	0.7	1.1	1.7	21.0	3.5	0.5
OPERATIONS, CIVILIAN	3.2	9.6	1.1	5.4	8.6	4.3	3.5	1.1
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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EMPLOYMENT CATEGORY	INCOME (\$1000's) COMMUNITIES BASE	CAMPB COMMUNITIES BASE	RETAIL EXPEND. (\$1000's) Camps Communities Base	COMMERCIAL EXTEND. BASE
BASE CONSTRUCTION	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	10272.5	41090.0	935.3	2547.6
OPERATIONS, CIVILIAN	15287.2	0.0	3554.3	0.0
INDIRECT EMPLOYMENT	14239.0	0.0	3310.6	0.0

EMPLOYMENT CATEGORY	INCOME (\$1000's) COMMUNITIES BASE	CAMPB COMMUNITIES BASE	RETAIL EXPEND. (\$1000's) Camps Communities Base	COMMERCIAL EXTEND. BASE
BASE CONSTRUCTION	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	15287.2	0.0	3554.3	2293.1
OPERATIONS, CIVILIAN	14239.0	0.0	3310.6	2135.7
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0

Table B-11. (Page 2 of 3) ACRES OF SCHOOLS

EMPLOYMENT CATEGORY	K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0
BASE ASS. & CO	0.0	0.0	0.0
SHELTER ASS. & CO	0.0	0.0	0.0
OPERATIONS, MILITARY	12.4	5.6	4.5
OPERATIONS, CIVILIAN	8.2	3.7	3.0
INDIRECT EMPLOYMENT	0.0	0.0	0.0

	ACRES HOUSING	ACRES ARTERIAL	ACRES RESIDENTIAL STREETS
		COLLECTOR	MINOR
SING. FAM	290.6	12.0	47.0
MULT. FAM	29.1	3.3	3.3
MIDDLE HOME	58.1	3.7	7.3
RETAIL & COMMERCIAL STREETS		33.9	63.9
TOTAL LINEAR FEET OF STREETS		22858.8	31581.3
ACRES IN PLAYGROUNDS		4.2	
ACRES IN NEIGHBORHOOD PARKS		5.5	
ACRES OF OPEN SPACE		17.0	
ACRES FOR RETAIL BUILDINGS		2.7	
ACRES FOR RETAIL PARKING		8.2	
TOTAL RETAIL ACRES		10.9	
ACRES FOR COMMERCIAL BUILDINGS		2.4	
ACRES FOR COMMERCIAL PARKING		6.4	
TOTAL COMMERCIAL ACRES		9.0	
NUMBER OF INDUSTRIAL EMPLOYEES		386.7	
SQ. FT. OF INDUSTRIAL BUILDING		322585.0	
SQ. FT. OF INDUSTRIAL PARKING		132542.0	
SQ. FT. OF ANCILLARY IND. USES		95045.4	
ACRES FOR INDUSTRY (TOTAL)		13.1	
ACRES FOR SOLID WASTE DISPOSAL		0.1	
POUNDS OF SOLID WASTE		21230.0	
CUBIC YARDS OF SOLID WASTE		10317.8	

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS
SING. FAM	37662140.0	1046170.6	680010.9	836936.4
MULT. FAM	7846279.0	139489.4	90668.1	111991.5
MIDDLE HOME	0.0	209234.1	136002.2	133909.8
CUNSTRUCTION COSTS FOR:				
ALL SCHOOLS		4953666.0		
POLICE FACILITIES		241569.6		
FIRE PROTECTION FACILITIES		198712.8		
GOVERNMENT FACILITIES		122284.8		
HEALTH CARE FACILITIES		1457227.3		
LIBRARY FACILITIES		254760.0		
RETAIL BUILDINGS		4790109.5		
COMMERCIAL BUILDINGS		4602216.5		
INDUSTRIAL BUILDINGS		2680050.0		

Table B-11. (Page 3 of 3)

STREETS	
ARTERIAL	1234376.8
COLLECTOR	1326413.6
MINOR	316781.3

NON-RESIDENTIAL COSTS		
SEWAGE	=	557957.7
WATER	=	181336.2
GAS AND ELECTRICITY	=	216487.6

SYSTEM-WIDE DEVELOPMENT COSTS		
SEWAGE FACILITIES	=	781140.8
WATER FACILITIES	=	435207.0
GAS AND ELECTRICITY FACILITIES	=	389677.7

WATER IMPACTS		
GALLONS OF WATER REQUIRED	=	849200.0
GALLONS OF WASTEWATER PRODUCED	=	530750.0

Table B-12. (Page 1 of 3)
SOCIAL IMPACTS DURING 1993 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING FAM	MULT FAM	MOBILE HOME
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	619.8	649.8	389.9	130.0	130.0
OPERATIONS, CIVILIAN	765.0	803.2	481.9	160.6	160.6
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0
EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	STUDENTS 10-12	K-6	TEACHERS 7-9 10-12
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	309.7	140.8	112.6	12.4	6.1
OPERATIONS, CIVILIAN	205.1	93.2	74.6	8.2	4.1
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	0.0
COMMUNITY SCHOOLS	1.3	0.4	0.2		
EMPLOYMENT CATEGORY	DOCTORS	NURSES	DENTISTS	OTHER HEALTH	HOSPITAL BEDS
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	0.6	1.9	0.7	1.1	1.7
OPERATIONS, CIVILIAN	3.2	7.6	1.1	3.4	8.6
INDIRECT EMPLOYMENT	0.0	0.0	0.0	0.0	4.3
EMPLOYMENT CATEGORY	INCOME (1000\$)	COMMUNITIES BASE	CAMPS	COMMUNITIES BASE	RETAIL EXPEND. (1000\$)
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	10272.5	41090.0	0.0	955.3	2547.6
OPERATIONS, CIVILIAN	15287.2	0.0	0.0	3554.3	0.0
INDIRECT EMPLOYMENT	14079.5	0.0	0.0	3273.5	0.0
EMPLOYMENT CATEGORY	COMMUNITIES BASE	CAMPS	COMMUNITIES BASE	CAMPS	COMMERCIAL EXPEND. (1000\$) CAMPERS
BASE CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	10272.5	41090.0	0.0	955.3	2547.6
OPERATIONS, CIVILIAN	15287.2	0.0	0.0	3554.3	0.0
INDIRECT EMPLOYMENT	14079.5	0.0	0.0	3273.5	0.0

Table B-12. (Page 2 of 3)

EMPLOYMENT CATEGORY	ACRES OF SCHOOLS		
	K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0
BASE ASS. & CO.	0.0	0.0	0.0
SHELTER ASS. & CO.	0.0	0.0	0.0
OPERATIONS, MILITARY	12.4	5.6	4.5
OPERATIONS, CIVILIAN	8.2	3.7	3.0
INDIRECT EMPLOYMENT	0.0	0.0	0.0

ACRES HOUSING	ACRES RESIDENTIAL STREETS		
	ARTERIAL	COLLECTOR	MUNICIPAL
SING. FAM	290.6	12.0	8.4
MULT. FAM	29.1	3.3	3.4
MOBILE HOM	58.1	3.7	6.9
RETAIL & COMMERCIAL STREETS	33.9	22.8	63.5
TOTAL LINEAR FEET OF STREETS	22886.8	31581.3	105576.0
ACRES IN PLAYGROUNDS	-	4.2	
ACRES IN NEIGHBORHOOD PARKS	-	3.5	
ACRES OF OPEN SPACE	-	17.0	
ACRES FOR RETAIL BUILDINGS	-	2.7	
ACRES FOR RETAIL PARKING	-	8.2	
TOTAL RETAIL ACRES	-	10.9	
ACRES FOR COMMERCIAL BUILDINGS	-	2.6	
ACRES FOR COMMERCIAL PARKING	-	6.4	
TOTAL COMMERCIAL ACRES	-	8.9	
NUMBER OF INDUSTRIAL EMPLOYEES	-	385.6	
SQ. FT. OF INDUSTRIAL BUILDING	-	322080.0	
SQ. FT. OF INDUSTRIAL PARKING	-	152296.0	
SQ. FT. OF ANCILLARY IND. USEB	-	94867.2	
ACRES FOR INDUSTRY (TOTAL)	-	13.1	
ACRES FOR SOLID WASTE DISPOSAL	-	0.1	
POUNDS OF SOLID WASTE	-	21230.0	
CUBIC YARDS OF SOLID WASTE	-	10317.8	

RESIDENTIAL COSTS	CONSTRUCTION			SEWAGE	WATER	ELEC & GAS
	SING	MULT	MOBILE HOM			
SING. FAM	37662140.0	1046170.6	680010.9	836936.4		
MULT. FAM	7846279.0	139489.4	90568.1	111591.5		
MOBILE HOM	0.0	209234.1	136003.2	133907.8		
CONSTRUCTION COSTS FOR:						
ALL SCHOOLS	-	4933666.0				
POLICE FACILITIES	-	244369.6				
FIRE PROTECTION FACILITIES	-	198712.8				
GOVERNMENT FACILITIES	-	122284.8				
HEALTH CARE FACILITIES	-	1437227.3				
LIBRARY FACILITIES	-	254760.0				
RETAIL BUILDINGS	-	4274764.0				
COMMERCIAL BUILDINGS	-	4665448.5				
INDUSTRIAL BUILDINGS	-	19,62401.0				

Table B-12. (Page 3 of 3)

STREETS	
ARTERIAL	1234376.8
COLLECTOR	1326413.6
MINOR	3167281.3

NON-RESIDENTIAL COSTS	
SEWAGE	= 557997.7
WATER	= 181336.2
GAS AND ELECTRICITY	= 216487.6

SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 781140.8
WATER FACILITIES	= 435207.0
GAS AND ELECTRICITY FACILITIES	= 389677.7

WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 849200.0
GALLONS OF WASTEWATER PRODUCED	= 530750.0

Table B-13. (Page 1 of 3)
SOCIAL IMPACTS DURING 1994 IN Beaver County, Ut

EMPLOYMENT CATEGORY	HOUSEHOLDS	TOTAL HOUSING	SING FAM	MULT FAM	MIDDLE FAM
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
BASE ASS. & CO.	0 0	0 0	0 0	0 0	0 0
SHELTER ASS. & CO.	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	618 8	649 8	389 9	130 0	130 0
OPERATIONS, CIVILIAN	765 0	803 2	481 9	160 6	160 6
INDIRECT EMPLOYMENT	0 0	0 0	0 0	0 0	0 0
EMPLOYMENT CATEGORY	K-6	STUDENTS 7-9	STUDENTS 10-12	K-6	TEACHERS 7-9 10-12
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
BASE ASS. & CO.	0 0	0 0	0 0	0 0	0 0
SHELTER ASS. & CO.	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	309 7	140 8	112 6	12 4	6 1
OPERATIONS, CIVILIAN	205 1	93 2	74 6	8 2	4 1
INDIRECT EMPLOYMENT	0 0	0 0	0 0	0 0	0 0
COMMUNITY SCHOOLS	1 3	0 4	0 2		
EMPLOYMENT CATEGORY	DOCTORS	NURSEB	DENTISTS	OTHER HEALTH	HOSPITAL BEDS
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
BASE ASS. & CO.	0 0	0 0	0 0	0 0	0 0
SHELTER ASS. & CO.	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	0 6	1 9	0 7	1 1	1 7
OPERATIONS, CIVILIAN	3 2	7 6	1 1	5 4	8 6
INDIRECT EMPLOYMENT	0 0	0 0	0 0	0 0	0 0
EMPLOYMENT CATEGORY	COMMUNITIES INCOME (1000\$)	BASE COMMUNITIES	CAMPS	COMMUNITIES CAMP	RETAIL EXPEND. (1000\$) CAMP
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
BASE ASS. & CO.	0 0	0 0	0 0	0 0	0 0
SHELTER ASS. & CO.	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	10272 5	41090 0	0 0	955 3	2547 6
OPERATIONS, CIVILIAN	15287 2	0 0	0 0	3554 3	0 0
INDIRECT EMPLOYMENT	14079 5	0 0	0 0	3273 5	0 0
EMPLOYMENT CATEGORY	COMMUNITIES INCOME (1000\$)	BASE COMMUNITIES	CAMP	COMMUNITIES CAMP	COMMERCIAL EXPEND. BASE COMMUNITIES (1000\$)
BASE CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
SHELTER CONSTRUCTION	0 0	0 0	0 0	0 0	0 0
BASE ASS. & CO.	0 0	0 0	0 0	0 0	0 0
SHELTER ASS. & CO.	0 0	0 0	0 0	0 0	0 0
OPERATIONS, MILITARY	10272 5	41090 0	0 0	955 3	2547 6
OPERATIONS, CIVILIAN	15287 2	0 0	0 0	3554 3	0 0
INDIRECT EMPLOYMENT	14079 5	0 0	0 0	3273 5	0 0

Table B-13. (Page 2 of 3)

EMPLOYMENT CATEGORY	ACRES HOUSING	ACRES OF SCHOOLS		
		K-6	7-9	10-12
BASE CONSTRUCTION	0.0	0.0	0.0	0.0
SHELTER CONSTRUCTION	0.0	0.0	0.0	0.0
BASE ASS & CO.	0.0	0.0	0.0	0.0
SHELTER ASS & CO.	0.0	0.0	0.0	0.0
OPERATIONS, MILITARY	12.4	5.6	4.5	
OPERATIONS, CIVILIAN	8.2	3.7	3.0	
INDIRECT EMPLOYMENT	0.0	0.0	0.0	

	ACRES HOUSING	ACRES RESIDENTIAL STREETS		
		ARTERIAL	COLLECTOR	MINOR
SING. FAM.	290.6	12.0	8.4	47.0
MULT. FAM.	29.1	3.3	5.4	3.3
MOBILE HOME	58.1	3.7	6.9	7.3
RETAIL & COMMERCIAL STREETS	33.9	22.8	63.5	
TOTAL LINEAR FEET OF STREETSB	22858.8	31581.3	103976.0	
ACRES IN PLAYGROUNDS		4.2		
ACRES IN NEIGHBORHOOD PARKS		5.5		
ACRES OF OPEN SPACE		17.0		
ACRES FOR RETAIL BUILDINGS		2.7		
ACRES FOR RETAIL PARKING		0.2		
TOTAL RETAIL ACRES		10.9		
ACRES FOR COMMERCIAL BUILDINGS		2.6		
ACRES FOR COMMERCIAL PARKING		6.4		
TOTAL COMMERCIAL ACRES		9.0		
NUMBER OF INDUSTRIAL EMPLOYEES		585.6		
SF FT OF INDUSTRIAL BUILDING		322080.0		
SQ FT OF INDUSTRIAL PARKING		152256.0		
SQ FT OF ANCILLARY IND. USES		94867.2		
ACRES FOR INDUSTRY (TOTAL)		13.1		
ACRES FOR SOLID WASTE DISPOSAL		0.1		
POUNDS OF SOLID WASTE		21230.0		
CUBIC YARDS OF SOLID WASTE		10317.8		

RESIDENTIAL COSTS	CONSTRUCTION	SEWAGE	WATER	ELEC & GAS	
				SING FAM	MULT FAM
ALL SCHOOLS	37662140.0	1046170.6	680010.9	836936.4	
POLICE FACILITIES	7846279.0	139487.4	90668.1	111591.5	
FIRE PROTECTION FACILITIES	0.0	209234.1	136002.2	133909.8	
GOVERNMENT FACILITIES					
HEALTH CARE FACILITIES					
LIBRARY FACILITIES					
RETAIL BUILDINGS					
COMMERCIAL BUILDINGS					
INDUSTRIAL BUILDINGS					

CONSTRUCTION COSTS FOR	=	4953666.0
ALL SCHOOLS	=	244569.6
POLICE FACILITIES	=	198712.8
FIRE PROTECTION FACILITIES	=	122284.8
GOVERNMENT FACILITIES	=	1457227.3
HEALTH CARE FACILITIES	=	254760.0
LIBRARY FACILITIES	=	4274764.0
RETAIL BUILDINGS	=	4665468.5
COMMERCIAL BUILDINGS	=	7662401.0
INDUSTRIAL BUILDINGS	=	

Table B-13. (Page 3 of 3)

STREETS	
ARTERIAL	1234376.8
COLLECTOR	1326413.6
MINOR	3167281.3
NON-RESIDENTIAL COSTS	
SEWAGE	= 997957.7
WATER	= 181336.2
GAS AND ELECTRICITY	= 216487.6
SYSTEM-WIDE DEVELOPMENT COSTS	
SEWAGE FACILITIES	= 781140.8
WATER FACILITIES	= 435207.0
GAS AND ELECTRICITY FACILITIES	= 389677.7
WATER IMPACTS	
GALLONS OF WATER REQUIRED	= 849200.0
GALLONS OF WASTEWATER PRODUCED =	530750.0

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